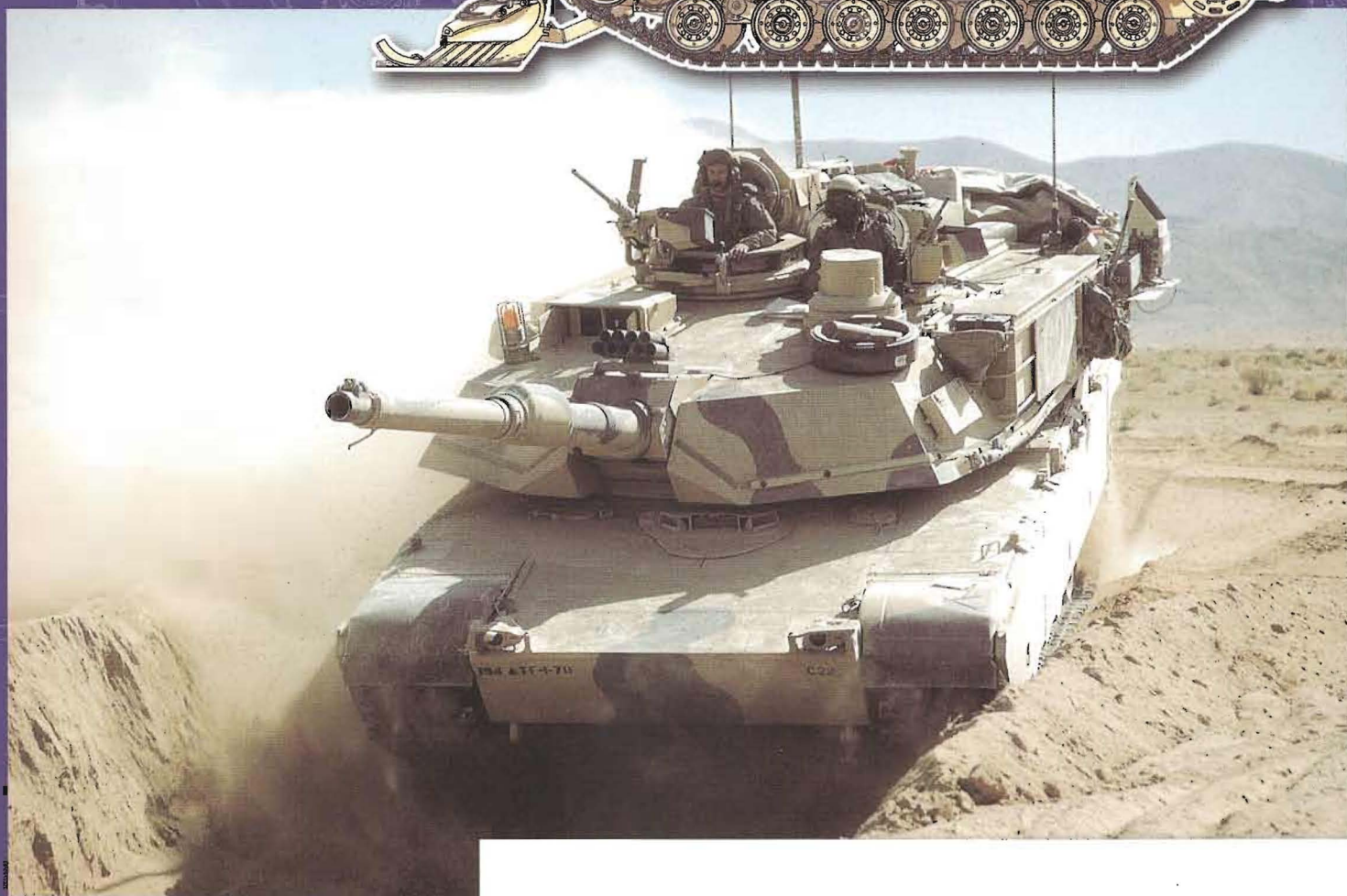


M1A1/A2 Abrams

Walter Böhm



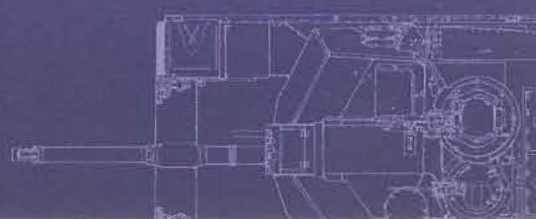
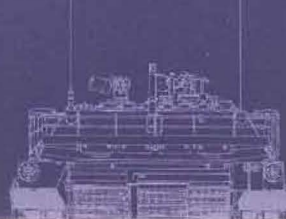
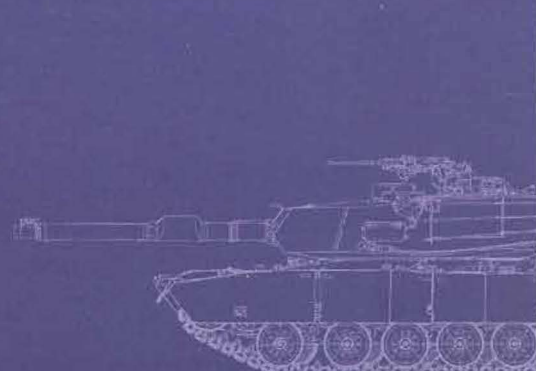
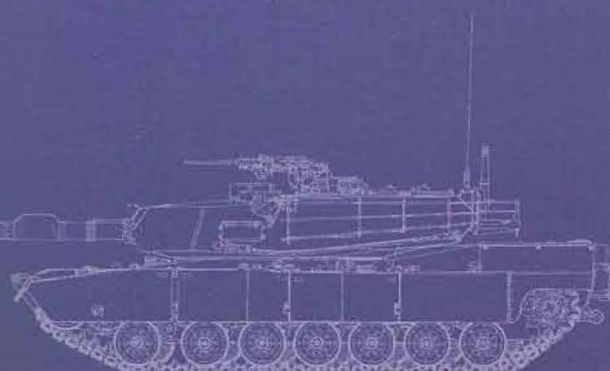
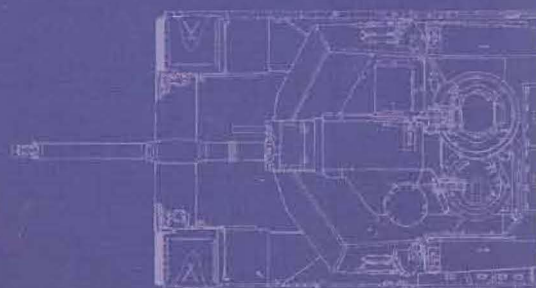
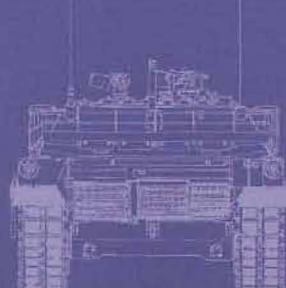
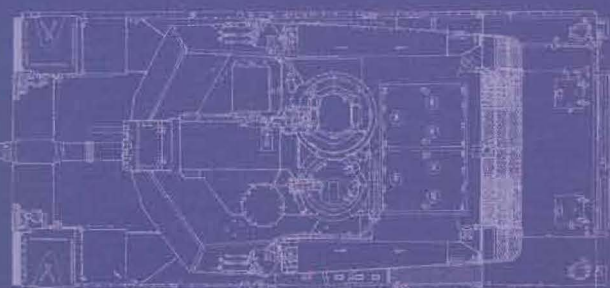
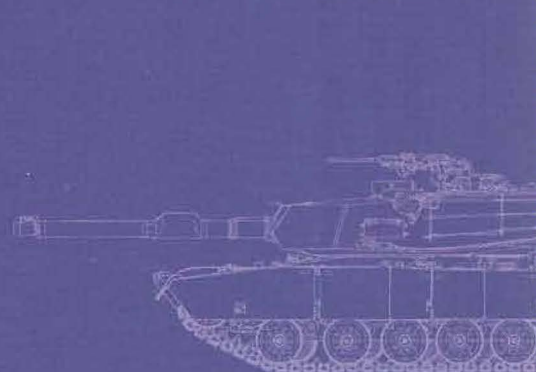
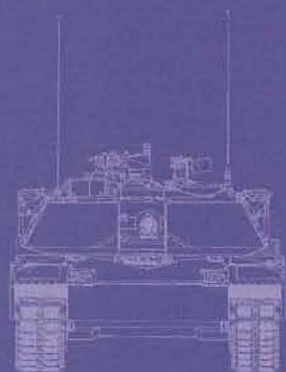
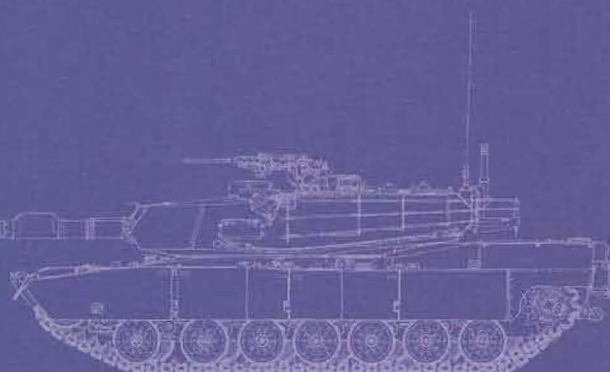
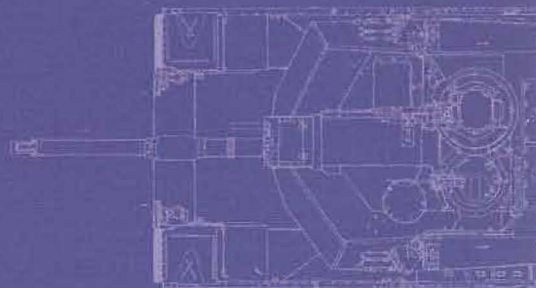
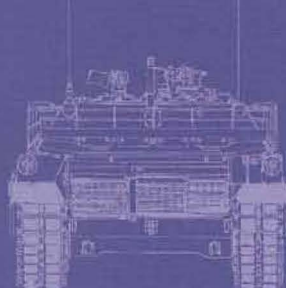
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M1A1/A2 Abrams

Text and photos by Walter Böhm

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Glossary

ID = Infantry Division

AD = Armored Division

AR = Armored Regiment

Armor = Armored Regiment

Bn = Battalion

ACR = Armored Cavalry Regiment

CAV = Cavalry Regiment

MBT = Main Battle Tank

AD (FWD) = Armored Division Forward

B Horse = Slang for Black Horse, nickname of 11th ACR

CFV = Cavalry Fighting Vehicle

Three Sisters = Area near Fulda (Germany) on the inner German border dominated by six hills

Böselager Recce competition = Biannual competition of NATO reconnaissance units

CMTC Hohenfels = Combat Maneuver Training Center Hohenfels, Bavaria, Germany

NTC = National Training Center, Fort Irwin, California, USA

MILES = Multiple Integrated Laser Engagement System using low-power laser projectors and detectors to simulate combat in exercises

LCAC = Landing Craft Air-Cushioned

MRE = Meal Ready to Eat, US Army combat ration

Ironland = Nickname for US 1st AD garrison position in Friedberg, Hessen, Germany

REFORGER = Return of Forces to Germany. Annual USAREUR deployment exercise during the Cold War era

INTRODUCTION

The basic concept for the M1A1/HA/A2 main battle tank is founded on the US Forces operative and tactical requirements for a modern battle tank. Armor, firepower, mobility, and reliability make the M1A1/HA/A2 ready for the fight.

From M1 to M1A1HA (Heavy Armor)

The M1 Abrams was developed under the control of the US Army to give the crews the most updated protection possible. The armor of the M1 (and LP M1) delivered in 1984 was a big step forward in protection against direct fire. The next main step was the M1A1 in 1985. It offered better protection for the crew, and the new German 120mm smoothbore gun M256, produced under license by Watervliet Arsenal, gives this Abrams version an increased firepower in comparison to the M1 (105mm M68A1 main gun). With the 120mm smoothbore gun and the new ammunition (developed in Germany), the M1A1 is capable of destroying every other tank in the world with high precision at long ranges. Another technical advantage that contrasts with the arsenal of the Warsaw Pact states was the introduction of the M1A1HA. The first M1A1HA (Heavy Armor) were delivered to US troops in Germany. The M1A1HA provides 70% more protection to the crew members than the older M1. Only a few minor modifications to the turret assembly were necessary to fit the German gun. Until 1991 most US tank battalions and cavalry regiments in Germany were equipped with the upgraded M1A1HA version.

Turret and Weapons

The main reason for the improved survivability of the M1A1HA Abrams was the uparmored turret. The armor is a kind of sandwich of armor consisting of plates with depleted uranium and Chobham armor built up in layers. The exact combination and structure is still a secret. A multi-purpose air-conditioning system became standard in the M1A1, replacing the former A/C air cleaners. The new system sends clean air into the crew compartment. A subsystem then distributes this air into the soldier's positions.

During the Gulf War, knocked-out Iraqi tanks bore silent witness to the high degree of accuracy of the 120mm smoothbore gun up to a distance of 300 meters! With the modern fire control system, stabilization for the gun, laser rangefinder, and thermal sights, the M1A1HA can fight battles under all conditions. At night or in the daytime, in dust, fog or rain, and even while the tank is moving, the rounds always find their target. The crew is able to select between different ammunition, for example, M829A1 APFSDS (Sabot) arrowhead rounds or M830 HEAT (High Explosive Anti-Tank). In addition to the commander's M2 .50-caliber machine gun, the loader has access to the M240 FN MAG58 7.62mm machine gun, and there is also a coaxial-mounted 7.62mm machine gun in the gun shield.

Since 1995 the M1A1HA have been equipped with new SINCARS (Single Channel Ground-Air Radio System) radios,

whose existence is indicated from the outside by thin antennae.

M1A1HA Hull and Powerpack

The hull and turret of the M1A1HA are constructed of welded flat armor plates. All previous American main battle tanks had cast hulls and turrets.

The 1,500hp Textron Lycoming AGT multifuel gas turbine, located in the rear of the hull, can accelerate the 62.6-ton heavy tank up to 69km/h (43mph) on roads and up to 48km/h (30 mph) over rough terrain. With 1,900 liters (502 gallons) of diesel fuel the vehicle has a range up to 466 kilometers (289 miles) on roads. If the main engine is not operating, the Auxiliary Power Unit (APU) in the turret bustle rack can supply power for the vehicle's electronics. This helps eliminate high fuel consumption while the gas turbine is running in neutral.

The suspension is an improved torsion bar type, with shock absorbers on the first, second and seventh road wheels. With a ground clearance of 48 cm (18 in.), the Abrams tank can climb over obstacles that are 1.07 meters (3.5 feet.) high and 2.74 meters (9 feet) wide. They can ford rivers up to 1.22 meters (4 feet) deep without preparation, and up to 1.98 meters (6.5 feet) deep with the use of a fording kit.

The new T-158 tank track has a longer life span than earlier track, and the removable rubber pads make it more cost effective.

M1A1HA during "Desert Storm 91"

Approximately 2,000 Abrams tanks saw action during "Desert Storm 91", 1,223 of which were the M1A1HA variant. Prior to the Gulf War, US Army Command believed that only the M1A1HA could provide crews with adequate protection against the best Iraqi tanks. But there were not enough vehicles of the HA variant to equip all tank units in the desert. The tank and cavalry units from the US VII Corps based in Germany had the largest stock of M1A1HA tanks. In Saudi Arabia a production line was formed to upgrade all arriving M1A1 tanks to the HA level. At the end of the Cold War and at the time of the fall of the Berlin wall in Germany, there were 865 M1A1 tanks available in REFORGER depots. In October 1990 these tanks were shipped to Saudi Arabia to be modernized. Until the ground war began on 24 February 1991, more than 1,200 M1A1 and M1A1HA were repaired and upgraded in Ad Damman, Saudi Arabia.

Through this program two tank divisions and one mechanized infantry division got M1A1HA or upgraded M1A1. On the night before the ground war began, the last HA tanks were hastily delivered to a cavalry unit. The next morning this unit opened the attack against the Iraqi positions. This improvised upgrading program was one of the cornerstones for the successful American offensive. After the ground war, the Germany-based US VII Corps had 618 M1A1HA tanks in its inventory. The XVIII Airborne Corps had 129 M1A1HA MBT. The USMC leased 75 M1A1HA from the Army before the ground war began. This Abrams replaced most of the M60A1 tanks

from 2nd and 4th Marine Tank Battalions.

During Operation "Desert Storm", the M1A1HA had a significant advantage as far as reliability compared to the modern Russian-built tanks. The M1A1HA was the winner of the ground war, fulfilling all expectations. Modern Iraqi T-72M tanks stood no chance against the American 120mm arrowhead round with its depleted uranium cores ("Silver Bullet"). Although most of the T-72s were nearly covered and protected with sand walls and the fighting distance was up to 3,000m, most American rounds hit and destroyed their target. The kinetic energy from the Sabot rounds was so great that the turrets of the T-72s were lifted right out of the hulls without an explosion of the ammunition inside the Iraqi tanks.

During the 100-hour war, the highly motivated US tank crews operated with the slogan, "One round, one hit, one kill". When M1A1HA were hit by the 125mm rounds of the T-72 tanks, there was no penetration and no one was wounded. There were a few cases of friendly fire — M1A1HA against M1A1HA — but no round could break the heavy armor, and all tanks damaged by friendly fire were repaired.

The change in the USMC's tank fleet was accelerated after the Gulf War. Today all 716 M60A1 have been replaced with 476 M1A1HA MBTs. The Marine M1A1HA tanks receive specific USMC modifications. These include the Deep Water Fording Kit (DWFK), battlefield override, digital electronic control unit, a missile countermeasure device mounting kit, position locating reporting system, as well as other modifications.

M1A1 MBT in Foreign Service

The first M1A1s to be exported were delivered to Egypt, which ordered 555 M1A1 Abrams for its army. Two of them were delivered in 1990, and another batch of 29 tanks was shipped in 1991. Parts for 530 more tanks were also shipped to Egypt, and the tanks were to be assembled in a factory there. The production of the Egyptian tanks was completed in 1998. The Egyptian Army's M1A1 MBTs are not fitted with the special heavy armor package like the M1A1HA tanks of the US Army and USMC.

M1A2 MBT Abrams

The M1A2 is the newest version of the M1 family. All of the wartime realities and the experiences that the M1A1HA went through during the Gulf War were factors considered in the creation of the M1A2. This tank is a product of advanced technology in the age of electronic information systems. All hardware and software in the M1A2 is up to date, and the information transfer is digital with Bus-systems. The M1A2 is still on the production line of General Dynamics Land Systems Division, Ohio USA.

The M1A2 program includes:

- Commander Independent Thermal Viewer (CITV)
- Improved Commander Weapon Station (ICWS)
- Driver's Integrated Display (DID)
- Onboard position and navigation equipment (POS/NAV)
- Distributed data and power architecture (DECU)

- Embedded diagnostic system
- Improved fire control system (FCEU)
- Radio Interface Unit (RIU)
- SINCGARS radios
- Rapid transfer of digital situational data

With the System Enhancement Program (SEP), the US Army will upgrade a total of 1,079 old M1 tanks to the M1A2 standard. In addition to these 1,079 rebuilt tanks, the Army has 62 newly produced M1A2 and 19 pilot vehicles in their inventory.

M1A2s in Foreign Service

Saudi Arabia has already ordered 315 M1A2 MBTs, which have now all been delivered (1999). By 1996 Kuwait had purchased a total of 218 vehicles in the M1A2 configuration. Some future potential customers of the M1A2 MBT Abrams are Greece and Turkey, but both nations prefer the M1A2 configuration equipped with the German Euro Powerpack diesel engine. But by the summer of 1999 there had been no orders.

The Future of the M1A2

The M1A2 will be the main battle tank in the tank fleet of the US Army and the USMC for the first decades of the 21st century. The M1A2 weapon, ammunition, and electronic components represent today's highest level of technological achievement. Military research has revealed that the tank development firms in other nations (Russia, in particular) will not be able to build a comparable battle tank until the year 2015. Given this fact, the M1A2 SEP will not get a 140mm main gun in the near future.

The continuous upgrading of the electronics systems and software programs is the basis for "in time" communication with other weapons systems. Some successful trials with the digital communication and control systems based on the Inter-Vehicular Information System (IVIS) have taken place with a modified M2 Bradley Fighting Vehicle and an OH-58D helicopter. There are also plans for a "Fire and Forget"-type of ammunition with long-range tracking and observation sights. The future will decide if the M1A2 is the last US battle tank and whether weapon carrier systems like the Future Main Battle Tank (FMBT) or attack helicopters will replace today's common tanks.

Tactics, Equipment, Mobility and Firepower of the M1A1 Main Battle Tank Abrams



The historical roots of the battle tank can be traced back to the heavily armored knights of the Middle Ages. In the 20th century, tanks play the same part in modern warfare. Heavily armed and well protected tank units can decide a battle when deployed in a concentrated force. The punch of modern tank units can breach the enemy lines and destroy them. (Walter Böhm)



In 1984 fourteen M1 (M1E1 version) tanks were upgraded for trials with the 120mm smoothbore gun. The whole turret had to be modified for the heavier gun. After this trial and test program, the US Army permitted the production of the new M1A1 Abrams tank with the German 120mm Rheinmetall smoothbore gun. The gun was adopted into the Army's inventory under the code number M256. (Walter Böhm)

In cooperation with supporting weapons systems, the M1A1 dominates every battlefield. During WWI, tanks had the task of protecting and supporting the infantry units. Today mechanized infantry units protect the flanks of the tank attack. Without this support, tanks become easy targets. (Walter Böhm)



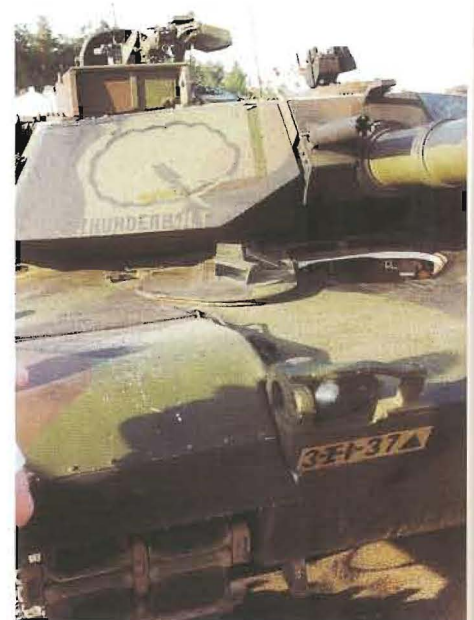
The M1 main battle tank is the first American tank since World War Two to feature welded construction. All previous battle tanks had a cast hull and turret. General Dynamics Land Systems trials showed that a welded construction provides more protection for the tank crew. Another advantage of the new technique is easier handling on the production line and during future maintenance and upgrading programs. The turret and hull are made up of modern Chobham armor, single armor plates that are welded together, which is the same system used on British Challenger 1 and 2 tanks. This armor gives the tank crews the best protection available today against all modern antitank rockets and tank guns. (Walter Böhm)



Here we see the big M1A1HA (Heavy Armor) turret, with its effective M256 smoothbore 120mm main gun. The equipment on the muzzle is the muzzle reference sensor. This sensor controls the bending of the barrel of the main gun, which bends all the time a little bit because of the difference in temperature between the hot gun and the cold air. The loader is situated on the left side of the turret and controls the FN MAG58 7.62mm machine gun. On the other side is the tank commander with the heavy M2 machine gun. US troops have used this machine gun without general modifications since WWII. This Abrams tank is equipped with the MILES II training system. On the side skirts of the tank are the battle markings of the "Iron Dukes", 2nd Bn., 37th Armor, Charlie Company, 1st Platoon. These markings were used in 1998. (Walter Böhm)



For transporting the Abrams MBT over long distances, the US Armed Forces use the Oshkosh M911 tank transporter. By 1999 this truck will have been replaced by the new HET (Heavy Equipment Transporter) M1070. The M1070 has a higher payload of up to 70 tons and better mobility. The new HET was necessary for the future M1A1/A2 versions. (Walter Böhm)



"Thunderbolt", the first M1. After the trial and test program, the new American battle tank was named M1 and received the official nickname "Abrams", in honor of General Creighton Abrams, the "father" of the M1. The first M1 delivered to the US Army was christened with the name "Thunderbolt", the same nickname as General Abrams' Sherman tank during WWII. During the Battle of the Bulge in December 1944, LTC Abrams was commander of the US Army's 37th Tank Battalion. On 24 December 1944, the 20 tanks from 37th Tank Bn. liberated the troops of the 101st Airborne Division inside Bastogne, which was encircled by German tanks. It was Abrams' own decision to plan and carry out this raid, against General Patton's orders. Based on this tradition, the M1A1 tanks from 37th Tank Bn. Commander (bumper code HQ66) today wear the famous "Thunderbolt" markings. (Walter Böhm)



The tank driver's position is in the middle of the hull, directly under the main gun. His seat is in a semi-reclining position. (Greg Stewart)

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This interior view of an M1A1 turret shows the loader's position. The M1A1's interior is similar to that of the M1 (105mm) — very crowded and lacking in necessary elbow room. (Greg Stewart)



Behind the gunner on the turret's right side is the tank commander's position. The commander is provided with six periscopes, which cover 360 degrees. The trigger for the M2 machine gun is also in this location. (Greg Stewart)



Using the GCDP (Gunner's Control and Display Panel), the gunner selects the appropriate ammunition for the next target, then controls the distance the round travels with the laser rangefinder. He then pulls the trigger for the main gun. (Greg Stewart)



Lightning and Thunder. The M256 120mm smoothbore gun demonstrated its capability during Operation "Desert Storm", satisfying all expectations. The combination of thermal sight, fire control, and gun stabilizing systems give the M256 main gun a high first-hit rate under all conditions — while moving, in bad weather, during the day or at night — to a battle distance up to 2,500 meters. (Greg Stewart)

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In contrast to the M1 (105mm) tank, all M1A1s are painted in the 3-color NATO camouflage scheme after they leave the production line of General Dynamics Land Systems. This camouflage was developed in cooperation with the German Bundeswehr. The colors are bronze green (RAL 6031), leather brown (RAL 8027) and tar black (RAL 9021). (Walter Böhm)



Here 3000hp works to carry out an unusual recovery operation. Due to the failure of the M88A1 recovery tank from D-Co.(34), 2-37th Armor, an M1A1HA from 1st platoon hauls a broken-down Abrams from 3rd platoon to the maintenance point. This scene took place during Exercise "Dukes Thoust" in January 1999. (Walter Böhm)

Today the M1A1HA Abrams tank battalions have the following structure: The battalion has four companies; each company has three platoons; each platoon has four tanks. Each company has two additional M1A1 tanks for the company commander and the company executive officer. The battalion has two additional tanks for the battalion commander and the battalion XO. In the 1999 structure there are 58 M1A1 tanks in a tank battalion. In the near future the US Army will reorganize for the 21st century. Heavy Division (Force XXI) and the tank battalions will be reduced to three fighting companies. (Walter Böhm)



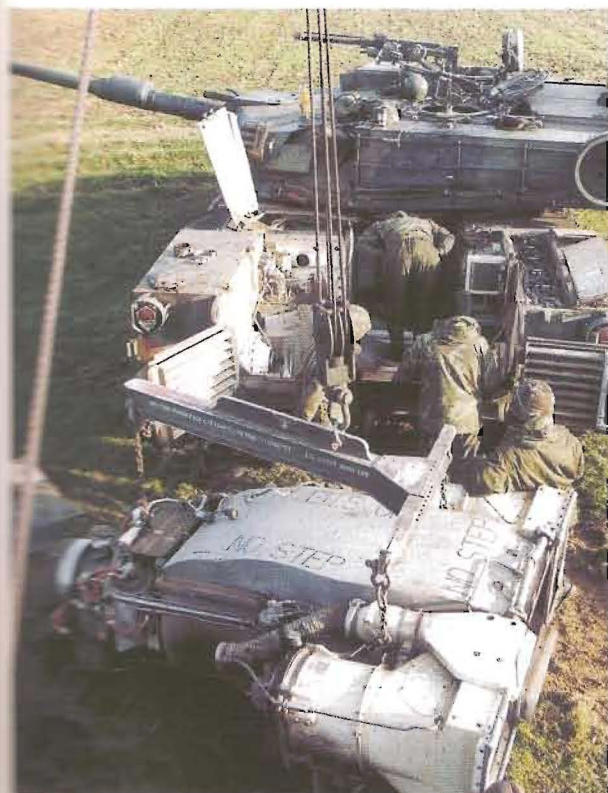
ROM (Refuel on the move). M978 Oshkosh fuel trucks refuel M1A1HA tanks of the 2nd Bn., 37th Armor (nickname: "Iron Dukes"). The Abrams tank needs a lot of fuel. The internal fuel tanks have a capacity for 1,900 liters (500 gallons) of JP8-Jet fuel. While traveling at a low speed and when the engine is in neutral, the fuel consumption of the Lycoming Textron AGT 1500hp gas turbine is extremely high. A digital engine-control system will become standard in the new M1A2 tanks, which will make the fuel consumption more effective. (Walter Böhm).



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In order to remove the M1 tank's powerpack, the turret must be turned to the nine o'clock position. Troops need less than an hour to pull out the powerpack, while maintenance men need more than four hours to pull one from the old M60 tank. (Greg Stewart)



Using an iron T-bar, this M88A1 recovery tank pulls the Telson Lycoming AGT 1500hp gas turbine out of an M1A1HA Abrams from 2-37th Armor. During the development of the M1, the gas turbine was often criticized because this drive was revolutionary for tanks. Most of the space in the engine compartment is needed for the support systems such as the air cleaners, exhaust system and gearbox. The automatic gearbox has four forward and two reserve gears. Beginning in 1998 the maintenance and service for USAREUR's tank fleet will be done by Industriewerke Saar in Germany. A contract for this was signed between USAREUR and the German Diel Company. General Dynamics Land Systems created a special training program to familiarize the Diel servicemen with the M1 technology. (Walter Böhm)

the tank
engine
standard



The M1A1HA can fight in all kinds of terrain. Its superiority on the battlefield is based on its high cross-country speed and mobility. With the upgraded T-158 tank track, the Abrams can climb over obstacles 1.07 meters (3.5 feet) in height and 2.74 meters (9 feet) in width. On open roads the Abrams has a full speed of 70 km/h (44 mph). In cross-country travel, it can reach a maximum speed of 50 km/h (31 mph). (Walter Böhm)



The crew of this M1A1HA from the "Iron Dukes", D-Co., 3rd Platoon, 2-37th Armor waits for marching orders after a simulated NBC attack during Exercise "Dukes Thoust 99". The tank crews in the US Army, such as this M1A1HA crew, are equipped with M42A2 protective masks. Note the mounting of the Hoffman device (gun fire simulator) and the missing side skirt. The crew has mounted a spare road wheel and a drive sprocket on the turret. (Walter Böhm)



"Bugs and gas": CBW (chemical/biological warfare). The M42A2 protective mask of the M1A1HA tank crews features a silicone rubber facepiece with an internal peripheral face seal, a rigid binocular lens system, gas-aerosol filters, a drinking tube, and a microphone. The radiac equipment detects and monitors nuclear radiation. (Walter Böhm)



The crew of an M1A1HA from 1/1 CAV fills up ammunition racks with M829A1 APFSDS (Armor Piercing Sabot) rounds. The complete round weighs 7.16 kg (16 lb). The American M829A1 arrowhead rounds have threefold the kinetic energy as BM-22 arrowhead rounds from Russian T-72 tanks. (Walter Böhm)



Another kind of ammunition put to good use by the Abrams 120mm main gun is the M831 HEAT-TP-T. The M1A1HA carries 15 HEAT rounds in its racks. (Walter Böhm)

The M1A1HA of 11th ACR ("Black Horse")

Black Horse Land. The 11th Armored Cavalry Regiment (ACR) "Black Horse" was based in the Fulda Gap area. During the Cold War, this area close to the German border near the German town of Fulda was one of the main targets for the Warsaw Pact forces. The 11th ACR was an elite unit. The "B Horse" was a composite of three different squadrons, each one having 27 M1A1HA MBTs and 41 M3A1 CFV Bradley vehicles. Along with the tank squadrons came a helicopter squadron with AH-64 Apaches. After Operation "Fish Hook", the 11th

ACR left Vietnam in 1972, replacing the 14th CAV Regiment in the area near Fulda. It was the task of 11th ACR units to control and observe more than 368 km (229 miles) of borderline and to be the eyes and ears for the US V Corps units in Hessen (US 3rd Armored Division) and Rheinland-Pfalz (US 8th Infantry Division). The 11th ACR used observation points (OP) Alpha, India, Romeo and Tennessee near the border (Nickname: Three Sisters) to observe the activities of the Soviet 8th Garde Armee by day and night.



Shoulder badge of 11th Armored Cavalry Regiment ("Black Horse").



Only 3rd Squadron, 11th Armored Cavalry Regiment (ACR) "Black Horse" used tactical numbers on the turrets of their M1A1HA for a short time. This was similar to the German Bundeswehr Leopard Panzerbataillione. The number "341" indicates a tank from 3rd Cavalry troop, 4th platoon, 1st tank from 3rd Squadron, 11th ACR. L-Troop (Leadhorse Troop) belonged to the Blue Forces during Exercise "Caravan Guard 89" in Germany. (Walter Böhm)



During the 1980s, the "Black Horse" Regiment was upgraded continuously. The M60A1 MBT was replaced by the M60A3 MBT. Then the troops received the new M1 (105mm), followed by the M1A1 and, finally, the M1A1HA. In May 1991 the 11th ACR deployed to Kuwait for Operation "Positive Force". This photo shows a new M1A1HA of B-Troop, 1st Squadron (Iron Horse), 11th ACR with OPFOR markings during the "Böselager Competition" reconnaissance exercise in the spring of 1990 in the Fulda Gap area. Notice the skull with the number "11" on the left turret plate. (Walter Böhm)

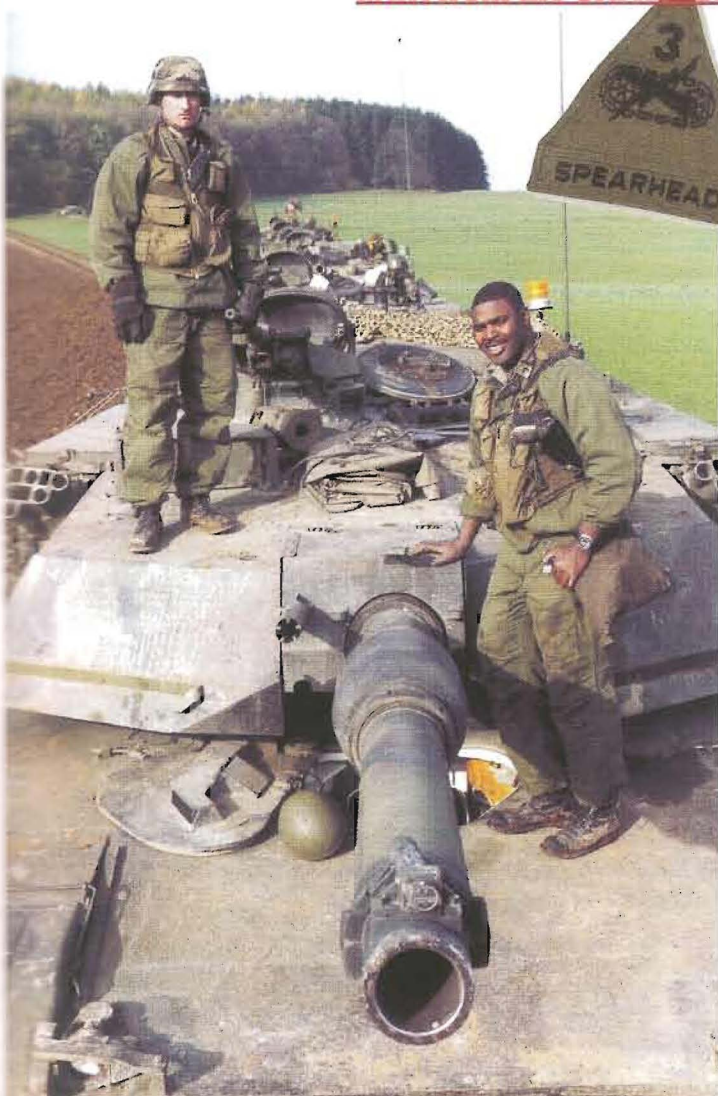


The 11th ACR was a frontline unit during the Cold War. Located as they were directly in front of the "Iron Curtain", the unit always received the newest equipment, like the upgraded M1A1HA. Notice the plate between the ammo boxes on the turret basket. The ammo boxes are for the crew members belongings. The plate with the symbols was used as battle markings in the late '80s. Difficult to understand, these signs were replaced by the digit-and-arrow markings beginning in 1990. (Walter Böhm)

In 1993 the 11th ACR was withdrawn and deactivated. Three years later the unit was reorganized and reactivated in the Mojave Desert of California. At Fort Irwin in the NTC (National Training Center), under both simulated and live-fire conditions, maneuver forces use tanks, helicopters and howitzers to train for attack and defense operations. (Greg Stewart)

M1A1 from the 3rd Armored Division ("Spearhead")

Shoulder badge of US 3rd Armored Division ("Spearhead").



The "Spearhead" division was located in the center of Germany in the area near the city of Frankfurt. During the spring of 1988, this division was equipped with the M1A1 Abrams MBT. The special feature of this new Abrams version, the M256 120mm smoothbore gun (Rh 120), was developed by the German Rheinmetall company. The American company Watervliet Arsenal produces this tank gun under license for the M1A1. The photo shows an M1A1 from 2nd Bn., 32nd Armored Regiment, 3rd AD, whose slogan is "Victory or Death". Notice the battalion insignia under the standing crewman. (Walter Böhm)



Speed! The powerful Textron Lycoming AGT 1500hp multifuel gas turbine allows the M1A1 Abrams to accelerate up to 70km/h (44 mph) on roads, with a fuel consumption of 4.1 liters (1.1 gallon) of diesel fuel per kilometer. Before the Gulf War (1990-91), all M1A1 tanks used the old-style T-156 track. Seen here is a photo showing an M1A1 from 4th Bn., 32nd Armored Regiment ("Red Lions"), 1st Brigade, 3rd AD ("Spearhead"). They played the 'good guys' during Exercise "Caravan Guard 89". (Walter Böhm)



During the last days of December 1990, the 3rd AD was ordered to deploy to Saudi Arabia to continue Operation "Desert Shield". This photo shows M1A1HAs from 4th Bn., 8th CAV, 2nd Brigade ("Iron Brigade"), 3rd AD ("Spearhead") waiting for railway transportation in the town of Gelnhausen in Germany. The tanks are marked with the new battle marking system on the turret and side skirts. The first digit, "6", symbolizes the battalion (4-8 CAV), the second digit, "1", stands for A-Company. The position of the arrow marks the platoon. Also visible is the spearhead insignia of 3rd AD. (Walter Böhm)



Another example of the battle marking system used by the "Spearhead" division. This division symbol is the same one used by the US troops in World War Two. Behind the spear point is the number "2", which stands for the 2nd Brigade, 3rd AD. (Walter Böhm)

M1A1HA Abrams during Operation "Desert Storm 91"



Burning Hell in Kuwait. The 3rd AD ("Spearhead"), who code-named their part in the assault "Desert Spear", destroyed the Iraqi 10th Armored Division and units from the 17th and 52nd Iraqi Divisions during their advance to Kuwait. Saddam Hussein's Iraqi Army created one of the largest environmental disasters in the history of the region when they set fire to the oil wells in Kuwait. The fire and smoke of the burning oil wells turned day into night, nearly eliminating visibility. With oil wells ablaze, an M1A1 from US 3rd AD enjoys a break in the fighting. The tank is marked with the insignia of 4-67th Armor ("Bandits") on the turret. The arrow marking near the coalition insignia identifies the tank as belonging to 2nd Platoon, Charlie Company. (US Army)



Blaze of Glory! An M1A1HA Abrams from 3-66th Armor, US 2nd AD (Forward). The 2nd Armored Division (FWD) remains in northern Germany, with one brigade. The unit was adopted into the 1st ID (Mech.), "Big Red One", as the division's 3rd Brigade. Together with the 1st ID (Mech.), the 2nd AD (FWD) broke the Iraqi lines of defense. During the night of 26/27 February 1991 the 2nd AD (FWD) took part in the fight against the Tawakalna Division of Iraq's elite Republican Guard. The 2nd AD was also involved in the fight against Iraq's 37th Brigade (part of 12th Iraqi Division). These events are more popularly known as the Battle of Norfolk. Five M1A1HA tanks were damaged during this campaign. The pictured tank, which belongs to 2nd AD (FWD) B-55, 3-66th Armor suffered a variety of damages. Note the missing mudflaps, the broken turret rack, and the missing tow cables and smoke grenade storage box. On the side skirts is the insignia of the coalition forces — the inverted "V". (Walter Böhm)



Another view of the results of the Battle of Norfolk. The tank's 120mm gun, which bears the name "Famine", suffered damage to its smoke absorber. (Walter Böhm)



On the left turret frontplate of the tank from 3-66th Armor, 2nd Armored Division (FWD) are the hand-written words "Blaze of Glory", an appropriate name considering the fighting the unit participated in. (Walter Böhm)

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Before the ground war started, the USMC leased 76 M1A1HA tanks from the US Army. Fifty-four of these tanks were used in the 2nd Marine Tank Battalion. The photo shows a Heavy Armor Abrams from the USMC 2nd Tank Bn. Notice the many slogans written by the troops: "Eat My Dust" on the rear side, "Four Horsemen Rev 6" on the main gun barrel, "Mary Lou" near the machine gun, and "Bang" on the gun shield. (Walter Böhm)



The 54 M1A1HA tanks used by the 2nd Marine Tank Battalion featured an equal number of personal markings. Of particular note is the Afrika Korps-style palm tree insignia and the M1 silhouette with the slogan "USMC Retired" on the frontplate of this Abrams. (Walter Böhm)

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This M1A1HA Abrams, which is a vehicle from 3rd Platoon, C-Company, 2nd Marine Tank Bn., took part in the "100-Hour War" in Kuwait in February 1991. The tank is marked with the tactical signs used by the Marines, with appropriate chevron and dots for the platoon. These markings were positioned on both the skirts and the turret rack. The tanks were leased from the Army and later returned after Operation "Desert Storm" had concluded. After this, B-Troop from 1-1 CAV, US 1st AD in Germany became the new owner of this tank. This rare photo shows the old USMC markings together with the new 1-1 CAV insignia. (Walter Böhm)



The Road to Basrah. An M1A1 from the "Victory" Division, US 24th Infantry Division (Mech.), takes up a position near the Iraqi Basrah-Safwan highway. The Abrams is marked with the inverted "V" chevron (the allied coalition marking) and the arrows identifying it as a member of C-Company. The two small squares stand for the 2nd Platoon. The bumper codes, as well as the battalion and vehicle numbers, were covered during the war to make it difficult for the media and the Iraqi secret service to identify the tanks. Notice the desert sand-painted antennae and the voluminous stuff on the turret. During Desert Storm the "Victory" Division was under the command of the US XVIII Airborne Corps. On day four of Operation "Desert Storm", this unit operated together with the US VII Tank Corps. Abrams tanks attacked along the Euphrates river valley forward to the city of Basrah to destroy the last two Republican Guard divisions there. This last and biggest tank battle during "Desert Storm", known as the "Battle of Rumalyah Oilfield", lasted for 16 hours. (Yves Debay)

Armored
appropriate

Battle of 73 Easting. The M1A1s from the US 2nd Armored Cavalry Regiment (2nd ACR, "Toujours Pret") was the reconnaissance unit for the US VII Tank Corps. They were tasked to find and hold the Iraqi Republican Guard units. During the late afternoon of 26 February 1991, the 2nd ACR's "Dagoon Battle Group" had first contact with an Iraqi brigade from the Tikrit Division. The following battle was nicknamed the "Battle of 73 Easting" because the combat area was specified on the map grids as "73-east". During this remarkable conflict the 2nd ACR troops held and destroyed the Iraqi unit. (USAREUR)





The M1A1HA from 2nd Platoon, D-Company, 2nd Marine Tank Battalion has the word "Necrophiliac" painted on the bore evacuator of its M256 120mm main gun. (Walter Böhm)

Another M1A1HA wearing USMC markings. This tank from 2nd Platoon, D-Company, 2nd Marine Tank Bn. is equipped with the frame for a mine roller system. (Walter Böhm)

M1A1HA from Task Force Eagle during Operation "Joint Endeavor 96" in Bosnia-Herzegovina



On 16 December 1995 the newly organized peacekeeping force IFOR (Peace Implementation Force) received orders to take part in Operation "Joint Endeavor 96". As a part of this multinational force, the main forces from US 1st AD based in Germany got their marching orders. All wheeled and tracked vehicles of the participating units were marked with the white IFOR initials. Here an M1A1HA with a mine roller kit from 1st Squadron, 1st Cavalry Regiment (nickname: "Blackhawk") waits for transportation near a railway station in Bödingen, Germany. (Walter Böhm)



This Heavy Armor Abrams from A-Troop, 1-1 CAV, which bears the name "Atreus" on the main gun barrel, secures Checkpoint Alpha Two near the Arizona Road in Bosnia. Different patterned ID panels have been affixed to turret. With the help of thermal sights, these ID panels make it easier for the US troops to identify their own vehicles. Through a thermal viewer these panels appear as dark squares on the hotter surface of the tank. (Walter Böhm)



The IFOR peacekeeping force occupied all the important points on the map. Here an M1A1HA from Alpha Troop, 1-1 CAV (nickname: "Abbadon") guards Checkpoint Alpha Two near the Arizona Road in the Brcko area of northern Bosnia. Note how the tank commander uses his poncho as a sunshield. (Walter Böhm)



A side view of the same tank. Visible on the side skirts are the IFOR initials. In front of this is the battle marking using the digit "9" for 1-1 CAV and the digit "1" for A-Troop (company). The chevron pointing to the right side indicates 2nd Platoon. The troops have mounted a tow bar on the rear side of the vehicle. All fighting vehicles were equipped with ID or IFF (Friend or Foe) panels. The M1A1HA tanks have these plates on all sides of the turret. (Walter Böhm)



A Heavy Armor Abrams from B-Troop ("Bulldogs"), 1-4 CAV, 1st US ID (Mech.) controls Checkpoint Charlie in the so-called "Badlands" area of eastern Bosnia. B-Troop, 1-4 CAV nicknamed this checkpoint in memory of the famous Checkpoint Charlie in Berlin, Germany during the Cold War era. In the background is a destroyed house. (Walter Böhm)



The tank commander of this HA Abrams from 2nd Platoon, "Bulldog" Troop, 1-4 CAV secures a road in the Malhala area. In this area there was a lot of conflict between the Moslem inhabitants and the Serbian police. The photo shows the secondary arms on the turret of an M1A1HA: the commander's M2 .50-caliber heavy machine gun and the loader's M240 FN 7.62mm machine gun. Every tank carries 1,000 rounds of 12.7mm and 12,400 rounds of 7.62mm ammunition in the storage racks. (Walter Böhm)



Another M1A1HA from 2nd Platoon, "Bulldog" Troop, 1-4 CAV at Checkpoint Charlie in eastern Bosnia. Notice that part of the side skirt is missing and how the hull and turret have been dirtied by the crew's footsteps. While operative, the 1-4 CAV belonged to the 1st ID (Mech.) in Germany. During Operation "Joint Endeavor 96", the 1-4 CAV was under the command of the 2nd Brigade, US 1st Armored Division. (Walter Böhm)

M1A1HA of US 3rd Infantry Division (Mech.) "Rock of the Marne"

Beginning in 1987, the mainline US 3rd Infantry Division (Mech.), "Rock of the Marne", upgraded its German-based tank battalions with the new M1A1 Abrams. During the big REFORGER exercise "Certain Challenge" in autumn 1988, the majority of the Marne Division tank battalions took part using the new tanks. At this time the 1st Armored Division was still driving the M60A3 Patton tank. Here a company of M1A1s from 3rd Bn., 63rd Armored Regiment is seen on the road during a counterattack near the IFOR CAV and towards the south of Würzburg. The unit belongs to maneuver group "Gold", the "bad guys" during REFORGER 88. (Walter Böhm)





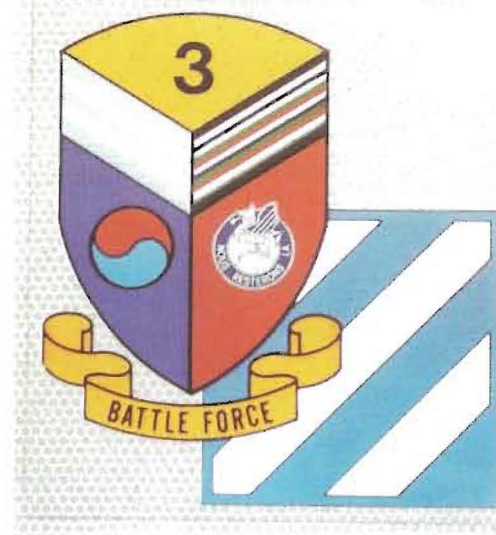
This M1A1HA Abrams has the nickname "Armageddon" painted on its 120mm smoothbore gun. The tank belongs to 2nd Bn., 64th Armor, 1st Brigade ("Raider Brigade"), 3rd ID (Mech.), during the unit's last winter exercise "Winter Warrior" in March 1996 at the CMTC Hohenfels, Germany. The 3rd ID (Mech.) used the one-digit battle markings to indicate company and platoon until the division's return to the States. (Walter Böhm)



At CMTC Hohenfels, Germany, the winter temperatures were often very cold. The tank crews used the exhaust grill to warm themselves and to heat their MRE (Meal Ready to Eat) rations, as is seen here in March 1996 during Exercise "Winter Warrior". The name "Attitude Check" is written in white letters on this M1A1HA. White-lettered nicknames were a common sight on the Abrams tanks of the 2-64th Armor. (Walter Böhm)



The 3rd Infantry Division rose to fame during World War One in the battle near the Marne river. Famed for their hard stand during this battle, the division was named "Rock of the Marne". The unit was deployed to Germany for 38 years. In mid-1996 they returned to the United States. Note the blue and white patch of the 3rd ID (Mech.). The 1st ID (Mech.) replaced the 3rd ID (Mech.) in Germany. Only a few troops were transferred during this reorganization. Mainly the vehicle bump codes were painted over and the soldiers were issued new shoulder patches. The letter "U" behind the four digit turret number stands for uranium and signifies heavy armor. (Walter Böhm)



After two weeks in the mud of CMTC Hohenfels, the vehicle markings were no longer visible. Only the tank's nickname "BTEP" is still visible on the gun barrel. Visible on the turret of this M1A1HA from 2-64th Armor, 3rd ID (Mech.) are parts of the MILES II training gear. (Walter Böhm)



The exercise numbers are reminiscent of the markings used during the annual REFORGER exercises in Germany. The cable for the mine plough winch comes out of the driver's vision block. The crew has decorated the plough with painted 'eyes'. In a real war every tank company was issued three TWMP. (Yves Debay)

From cold Hohenfels, Germany we travel to the hot Egyptian desert for Exercise "Bright Star 97". After the 1st ID (Mech.) replaced the 3rd ID (Mech.) in Germany, back in the USA the 24th ID (Mech.), "Victory" Division, was renamed in 3rd ID (Mech.). So the 3rd ID (Mech.) became a part of the US Forces' Rapid Deployment Joint Task Force that operated all over the world. This M1A1HA, painted in desert camouflage, belongs to the 3-69th Armored Regiment, 3rd Inf. Div. (Mech). The tank with the TWMP (Track Width Mine Plough) waits for orders. Notice the large exercise markings and "Black Panther" on the turret. (Yves Debay)



The Chrysler-built mine clearing roller system can be used by all US battle tanks. With the support of an M88A1 recovery tank, a mine roller system is mounted on an M1A1HA from 3-69th Armor, 3rd Inf. Div. (Mech). (Yves Debay)



The main problem for the American tank units at the beginning of "Desert Storm 91" were the Iraqi minefields along the front line. To solve this problem and give the troops a chance to overcome the obstacles, the Abrams tank battalion received Battalion Countermine Sets (BCS). The BCS is a combination of mine plough and mine roller kits. (Yves Debay)



Complete Chaos. Here an M1A1HA from 3rd Platoon, C-Company, 3-69th Armor operates during "Bright Star 97" with the mounted mine clearing roller system. The battle markings on the skirts were taken over from 24th ID (Mech). These symbols are totally different from other US Army tank units, but similar to the US Marine Corps insignia. (Yves Debay)



The slogan "Speed and Power" is written on the gun barrel of the remaining M1A1HA from 3-69th Armor, 3rd Inf. Div. (Mech). The very effective but hard-to-maintain air cleaning system protects the expensive gas turbine blades against dust and dirt. The fine dust in the desert poses a serious problem for the Abrams tank. (Yves Debay)



Tank commanders from 3-69th Armor gather for a briefing during Exercise "Bright Star 97". The sandbox serves as a model of the training area. In contrast to their vehicles, which are painted in desert camouflage, the soldiers wear woodland pattern battle dress uniforms. (Yves Debay)

M1A1HA of US 1st Armored Division ("Old Ironsides") in Germany



During Exercise "Warlord" in the summer of 1992, M1A1HA from 1st Squadron, 1st CAV secure a tactical operation center from the HQ-Troop. At the time some M1A1HA from 1-1 CAV wear the old T-156 track. This tank track has a short life span and was replaced by the new T-158 track. Notice the different mounting of the left and right track. (Walter Böhm)



Shoulder badge of US 1st Armored Division ("Old Ironsides").

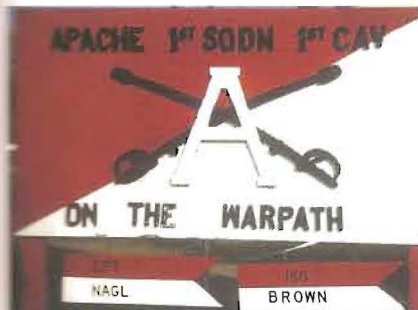


The Cavalry Squadron is a special unit in the US Army heavy division. The CAV unit is a combination of helicopters, tanks, and infantry fighting vehicles. One Cavalry Troop (company) is a mixture of 9 M1A1HA MBTs, 1 M3A2 CFV Bradleys, 2 M1064A3 120mm mortars, one M981 FIST-V and one M577 command post vehicle. The photo shows an M1A1HA Abrams and M3A2 Bradley from A-Troop (Apache) during winter exercise "Dragon Thunder 98" in the 7th Army Training Center at Grafenwöhr. (Walter Böhm)



The training areas of Grafenwöhr and Hohenfels give USAREUR tank and infantry units the unique possibility of training in European woodland under winter conditions. This M1A1HA belongs to the 4th platoon of A-Troop, 1-1 CAV. The tank is marked with the usual V Corps battle markings. One cavalry tank platoon has four M1A1HA Abrams. The smoke grenade stowage box must be removed in order to mount the Hoffman device (gun fire simulator). Notice the name "Absolute" on the 120mm gun. (Walter Böhm)

"Apache on the Warpath" is the slogan of A-Troop, 1-1 CAV. In a cloud of dust, an M1A1HA of A-Troop drives to CALFEX (Combined Live Firing Exercise) Range 301 in Grafenwöhr. Notice the black star between the bumper codes on the first tank's hull. (Walter Böhm)



Shown here is the sign of members of A-Troop, 1-1 CAV. (Walter Böhm)



Hasty Attack. An M1A1HA Abrams from B-Troop ("Bandits") and an OH-58D Kiowa Warrior chopper from E-Troop (Air Scout Platoon) work together during a "hasty attack" on the range in Grafenwöhr. The enemy can identify the tell-tale heat exhaust from the M1A1 gas turbine using infrared sights. (Walter Böhm)



This is the unit sign of the tank crew members of B-Troop. (Walter Böhm)

During Exercise "Iron Thunder", soldiers from 69th Chemical Company decontaminate an M1A1HA belonging to B-Troop. The paints used for the 3-tone camouflage are easier to clean. The 69th Chemical Company uses special vehicles like the M93 Fox (NBC), the M1059 Smoke Generator and the M923TPU and M12A1 decontamination kits. (Walter Böhm)





During a low-intensity phase of Exercise "Dragon Lightning 94" in Grafenwöhr, this M1A1HA of C-Troop 1-1 CAV secures a checkpoint. Thanks to the good training received in Hohenfels and Grafenwöhr, the troops from US 1st AD were very well prepared for the tasks during the peacekeeping mission in Bosnia. The number "3" on the tank is used to denote C-Troop, 1-1 CAV. Notice the monster on the turret frontplate. (Walter Böhm)



Close-up of the monster painted on the turret frontplate that serves to personalize the M1A1HA of C-Troop, 1-1 CAV seen in left photo. (Walter Böhm)



The 1st Squadron, 1st Cavalry Regiment (nickname: "Blackhawk") has a long tradition that dates back to the dusty cavalymen during the Indian War. It began with the fights against the Blackhawk Indians, Mexican War, Civil War and continued on to Vietnam (Quang Tin Province in the I Corps Tactical Zone), duty as frontline troops during the Cold War in Germany, spearheading the 1st Armored Division's attack against Iraq, and being the first unit for Task Force Eagle to cross the Sava river in Bosnia. It has 89 battle honors, the most of any battalion-size active unit in the US Army. The photos show M1A1HA fitted with the complete MILES equipment during Exercise "Iron Star 95" in CMTC Hohenfels. Note the radioactive monster on the turret. (Walter Böhm)

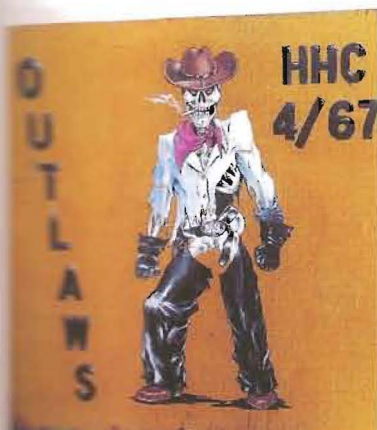


During exercises in the Combat Maneuver Training Center (CMTC), the 1-1 CAV fights against the OPFOR (Opposing Force). The OPFOR unit, which is based in CMTC, is well prepared to train the guest units. It is the OPFOR's job to train all USAREUR tank and mechanized infantry units. The pictured M1A1HA of C-Troop, 1-1 CAV was "destroyed" by an OPFOR T-80 (M60A3) in an ambush. This fight took place during Exercise "Iron Star 95". To indicate that it has been disabled, the M1A1HA must turn its turret backwards. (Walter Böhm)



The sign of 1-1 CAV ("Blackhawk") carries the slogan of C-Troop: "Comanche, Strike like Fire". (Walter Böhm)

After Operation "Desert Storm" in 1991, the 4th Bn., 67th Armor (nicknamed "Bandits") came back to Germany from Kuwait. The unit is now under the command of 1st AD. All M1A1HA Abrams are painted forest green before being shipped to Germany. The crew of this Abrams from B-Co., 4-67th Armor prepares the tank for a live firing exercise at CALFEX Range 301. The skull on the frontplate is the "Bandits'" battalion symbol. The mine plate for the mine roller is also mounted on this tank. The muzzle reference sensor is fitted onto the barrel with bolts. (Walter Böhm)



This photo shows the insignia of HHC Co. "Outlaws", 4-67th Armor. (Walter Böhm)

Through the heavy autumn fog in November 1993, M1A1HA of B-Co., 4-67th Armor ("Bandits") role across an ISGAVLB tank bridge during a counterattack exercise. The tanks are painted in forest green overall and have no additional markings. The reflecting yellow strips are helpful when the tanks travel on German civilian roads. (Walter Böhm)



This is the unit patch of 4th Bn., 67th Armored Regiment ("Bandits"). (Walter Böhm)

Step by step the forest green Abrams from 4-67th Armor were repainted in the standard three-tone camouflage. This heavy Abrams from the battalion XO (HQ-65) carries the battalion symbol (white skull) on both sides of the turret and the inscription "Excalibur" on the gun barrel. The names of the crew members are written in white letters on the smoke grenade storage boxes. (Walter Böhm)





This is a unique photo of an M1A1HA of A-Co., 4-67th Armor ("Bandits"). In spite of the new T-158 track, this tank is equipped with the retainer ring on the drive sprocket, the same thing that was mounted on the first M1 (105mm) version. To upgrade the life span and reliability of the tank tracks, most M1A1HA were fitted with new T-158 tracks during Operation "Desert Storm 91". The main advantages of the T-158 tracks are the removable rubber pads. (Walter Böhm)



"Courage & Conquer", front side emblem of the "Iron Dukes" of 2-37th Armor, US 1st Armored Division.



"Iron Dukes", 2-37th Armor, US 1st Armored Division (Rear side).



"Change of Mission". The 2nd Bn., 67th Armor ("Iron Dukes"), is the 2nd tank battalion from 1st Brigade, US 1st AD. Based on the long tradition, the 2-67th Armor was renamed in 2-37th Armor in 1998. Here M1A1HA of B-Co. 2-67th Armor pass a column of M2A2 IFV from the supporting 4-12th Infantry after a battle in the "Superbowl Valley" in CMTC Hohenfels. (Walter Böhm)



A ribbon bridge raft built by the 502nd Engineer Company ("River Rats"), 130th Engineer Brigade is used as a tank ferry. The crew from this M1A1HA of 2-68th Armor, 2nd Brigade ("Iron Brigade") wear life jackets for security reasons. The ribbon bridge was developed by the Soviet Union. The bridge system first saw action during the 1973 Arab-Israeli War when the Egyptian Army crossed the Suez Canal in October 1973. (Walter Böhm)

Ironland: M1A1HA Abrams of B-Co., 1-37th Armor. The 1-37th Armor is one of the most famous tank battalions in the 1st AD. The unit's history goes back to the 37th Tank Battalion commanded by Creighton Abrams during WWII. The shape of the arrow sign (battle marking) is typical for the US V Corps units. The digit and the shape of the arrow on the side skirts and on the plate on the bustle rack are identical. The arrow marking on the vehicle identifies it as belonging to the 3rd platoon. The digit "3" means 1-37 battalion, while the digit "2" stands for B-Company. (Walter Böhm)



M1A1HA of US 1st Infantry Division (Mechanized) in Germany

The US 1st ID (Mech.), "Big Red One", replaced the 3rd ID (Mech.), "Rock Of the Marne", in Germany in April 1996. The 2nd Brigade, 1st ID (Mech.) has one Abrams Bn. (1-77th Armor) located in Schweinfurt. The 3rd Brigade, which is based in Vielseck, has two M1A1HA battalions (1-63th Armor and 2-63th Armor) in 1999. The 1st ID (Mech.) troops use a special bumper code system for their vehicles. In contrast to the usual marking system, the first platoon's code numbers do not begin with 11, 12 and so on, but rather with 15, 16, and so on (for example, 2nd Platoon: 25, 26, . . . ; 3rd Platoon: 35, 36, . . .). The M1A1HA in front belongs to the 1st Bn., 77th Armor, A-Co., 3rd Platoon, in which it is the first tank. (Walter Böhm)



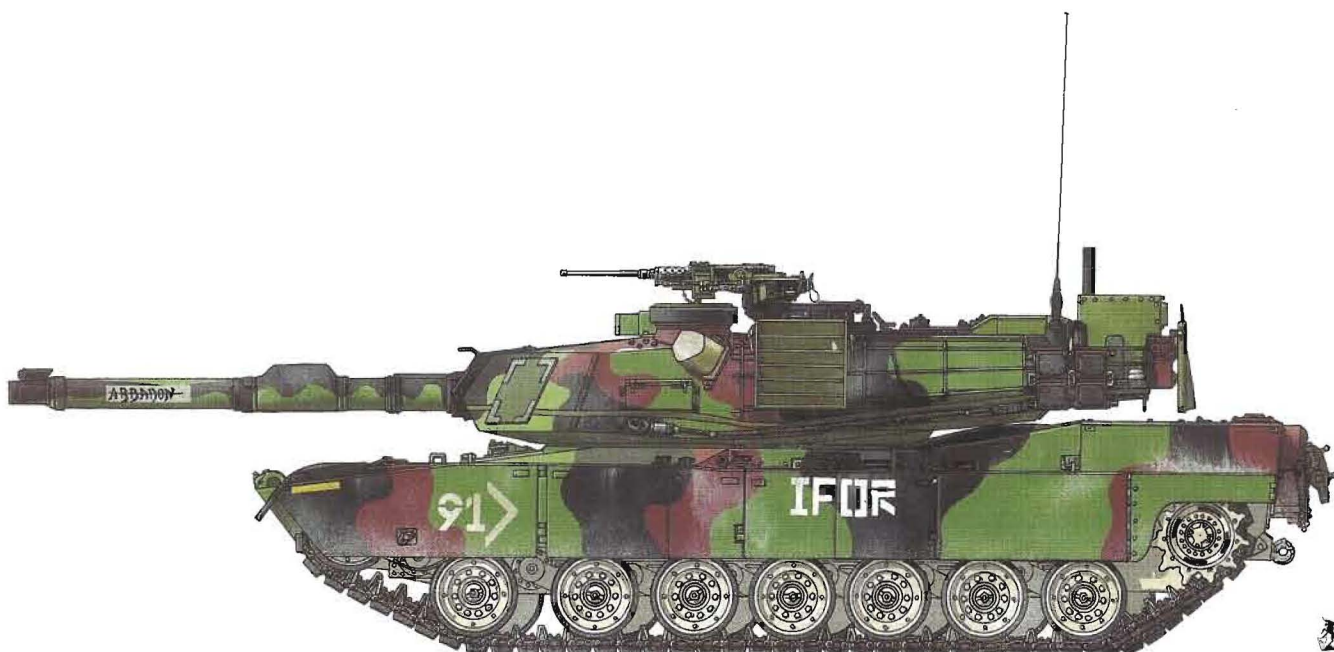
A look at the turret roof of this M1A1HA of 1-77th Armor, 1st ID (Mech.) shows some interesting detail. The blow-off panels above the ammunition racks are modified with additional pressure valves. Only a few tanks became upgraded in this manner. The additional valves became standard with the M1A2 version. If the rounds explode, the resulting pressure can escape through the valves. (Walter Böhm)



Big trouble. During a tactical march, the idler wheel on this M1A1HA of A-Co., 1-77th Armor, 1st ID (Mech.) was broken near Schweinfurt. The tank was improvised and replaced the damaged part with the fourth road wheel. The broken idler wheel can be seen on the turret. (Walter Böhm)

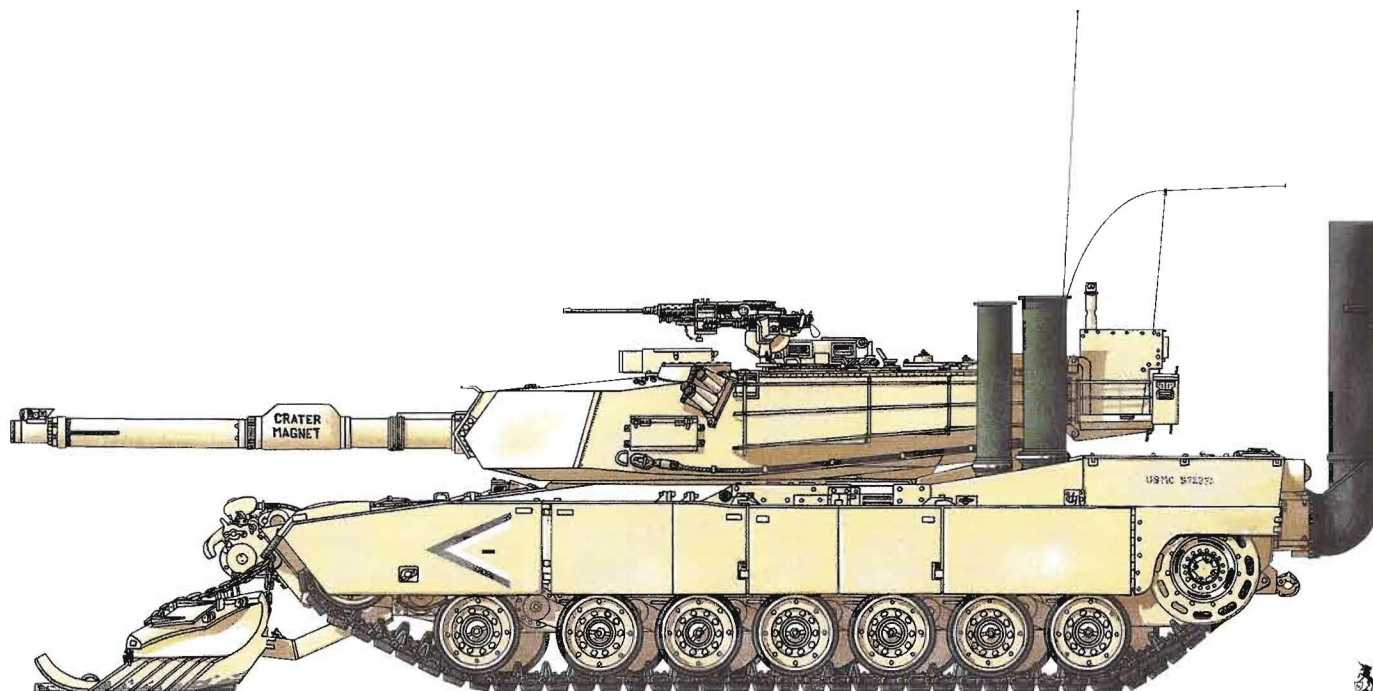


The T-158 track. The new tank track for the M1A1HA is a double-pin type with removable rubber pads. The track is designed to last at least 3,400 kilometers (2,111 miles) before needing replacement. This is a 300 percent increase over the current T-156 track. (Walter Böhm)



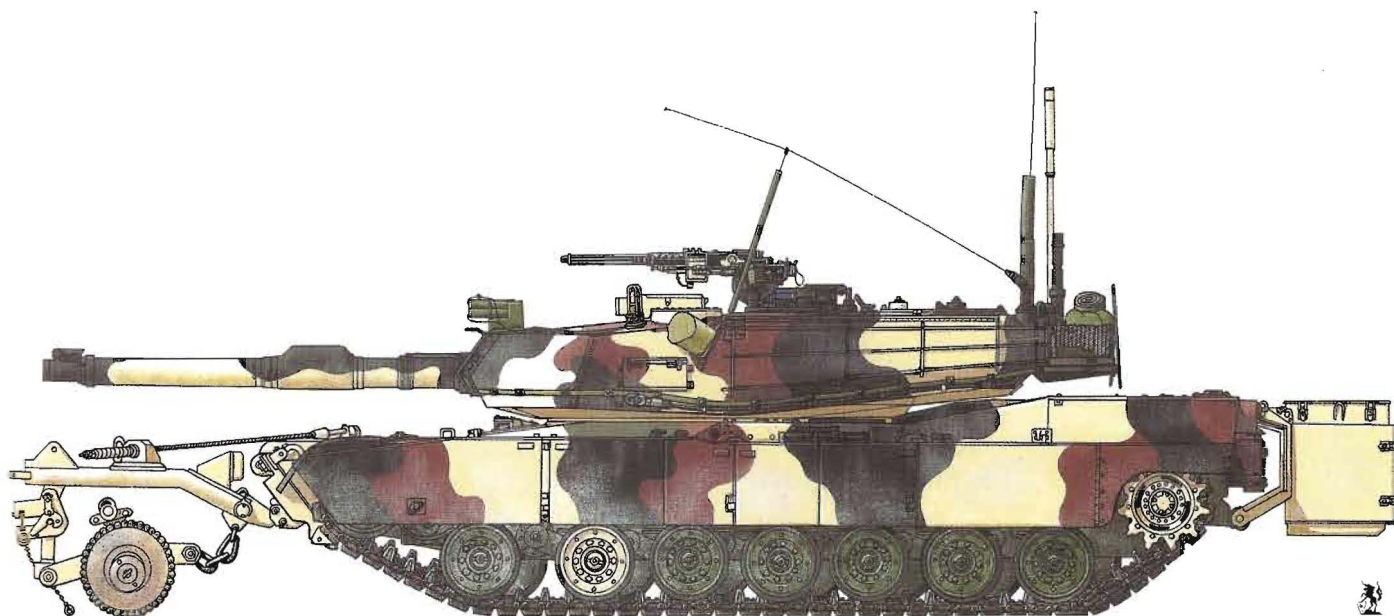
M1A1HA Abrams, Apache-Troop, 1-1 CAV, Checkpoint Alpha Two, Arizona Road, Brcko area in northern Bosnia, September 1996

Here is an example of a tank with the typical markings used during Operation "Joint Endeavor" in Bosnia. This M1A1HA, nicknamed "Abaddon", is painted in the usual NATO 3 color camouflage and wears the battle marking "91" on the front side skirt. This digit represents the A-Troop (nickname "Apache") of the 1-1 CAV. The arrow to the right side is the symbol for the 2nd Platoon. The stenciling IFOR on the side skirt stands for NATO "Implementation Force", and was painted to all NATO vehicles in Bosnia during Operation "Joint Endeavor". Note the additional "ID Panels" around the turret for the friend-foe signature. These were mounted on all American tracked vehicles before their deployment to Bosnia.



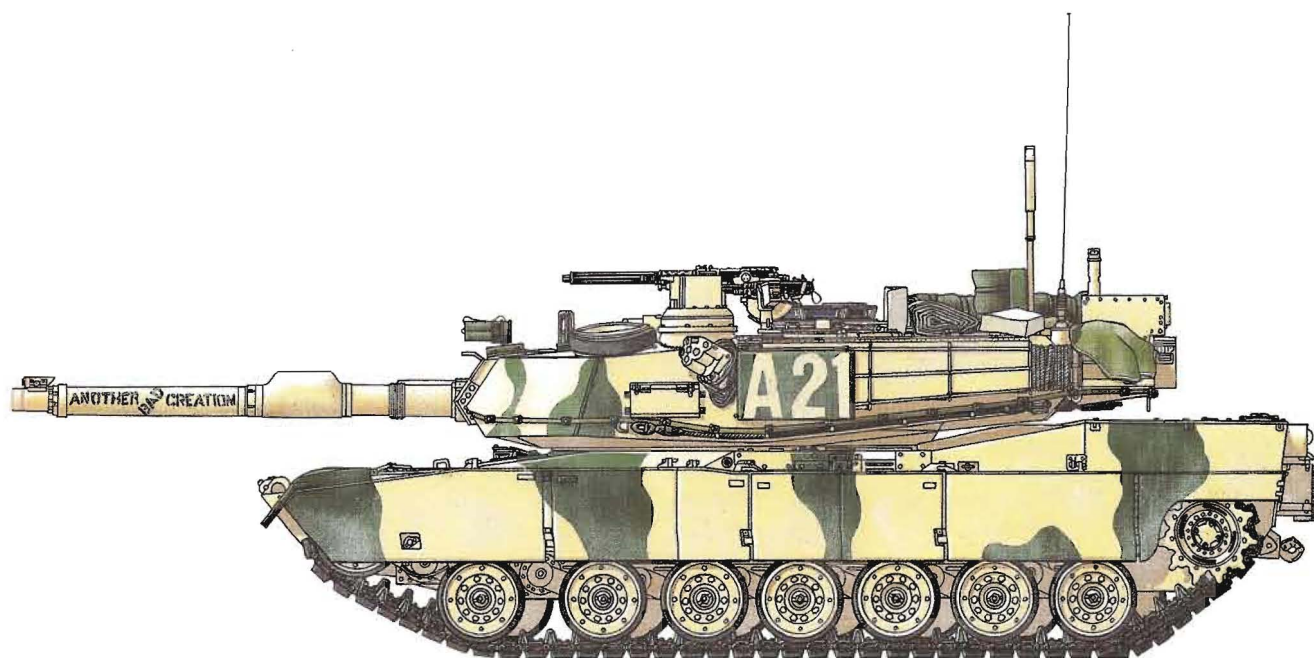
USMC M1A1HA Abrams "Crater Magnet", 1st Platoon, B-Coy, with DWFK and TWMP, Mojave Desert 1996

This USMC M1A1HA in desert camouflage is equipped with the TWMP (Track Width Mine Plough) and the USMC typical DWFK (Deep Water Forcing Kit) for amphibious operations. The crew's nickname for their tank, "Crater Magnet", can be seen on the gun bore evacuator. The USMC uses a special marking system which is different to the Army system. The single black ring on the gun and the single black square behind the arrow on the track skirt represents the 1st Platoon. The black and white arrow is the symbol for the B-Coy. The lettering USMC and the vehicle's registration number were washed out by the weather. Notice the APU (Auxiliary Power Unit) in the turret rack and the modified blow-off panels on the top of the turret. The drive sprocket was replaced with the older ring to prevent loose tracks.



M1A1HA of an unidentified unit, with M1 Battalion Countermine Set, Depot Fort Irwin, NTC

A M1A1HA with the typical NTC 3-tone desert camouflage. The tank is fitted with the MILES laser training system, M1 Mine Roller Set, and the CLAMS (Cleared-Lane Marking System) box on the rear. The Israeli-made CLAMS box is no longer used by the tank units because engineers had to clear mines by marking a path through the minefields. The drawing shows a tank before the troops take it over from the depot. Before the training starts, these vehicles get temporary unit markings by the crew.



M1A2 Abrams, 194th Brigade Task Force 1-70 AR, National Training Center

This M1A2 Abrams, named "Another Bad Creation", belongs to the A-Coy of the 194th Brigade Task Force 1-70 AR during the troop trials with the brand new M1A2 Abrams in the NTC. The desert camouflage was modified, with dark green patches all around the vehicle. For an easier identification during these troop trials, the tank was fitted with big plates on the turret. The digit "A21" represents a tank from the A-Coy, 2nd Platoon, 1st vehicle. The tank is equipped with the MILES Training System, which includes the Hoffmann device (simulates gun fire) on the turret front, the flashlight in front of the spare road wheel, a big additional antenna, and the MILES strips around the turret.



All new-production M1A1/M1 tanks are fitted with the new T-158 track. The T-158 was developed jointly by the US Army Tank Automotive Command, FMC Steel Products and Goodyear. This M1A1HA from 2-63rd Armor, 1st ID (Mech.) is equipped with two car tires in front to simulate a main roller during an exercise with the 502nd US Airborne Bn. at the 7th US Army training center in Grafenwöhr, Austria, in August 1997. Notice the symbol of the American armored troops (the silhouette of the crossed swords and tank) on the smoke grenade stowage box. The 2-63rd Armor tank crews are to mount the camouflage net on the barrel of the main gun. (Walter Böhm)

Task Force 1-4 CAV, US 1st ID (Mech.) in CMTIC Hohenfels. During Exercise "Spur Response 97", the tankers prepare a "Zone Recon" mission. Stored in the bustle rack are water canisters, MREs and other baggage. Above the ammo boxes is a slightly damaged armor plate bearing the battle marking. The barbed wire is used to protect the tank in a holding area against unknown visitors. Note the IFOR lettering from the deployment with the Peace Implementation Force in Bosnia on the side skirts of this M1A1HA from Charlie Troop (nickname: "Charlie Rock"). During the annual training rotation at CMTIC Hohenfels, the 1-4 CAV was reinforced with engineer and artillery units to build up a task force. (Walter Böhm)



"Ace of Spades". The crew of this M1A1HA tank (A-24) was the best crew of this unit during the battle run at gunnery training inside Grafenwöhr training area in the autumn of 1997. (Walter Böhm)



This M1A1HA from 1-4 CAV's A-Troop is decorated with red star OPFOR marking. This tank plays the enemy role during a "Movement to Engagement" exercise. During this kind of Situation Training Exercise (STX), the maneuver units must attack the enemy forces while on the move. (Walter Böhm)

The 1-4 CAV uses the names of trees (birch, ash, oak) to specify the battle lines for the attack during Exercise "Spur Response 97". During the first stage, the mixed unit with OH-58D Warrior helicopters and M3A2 Bradley CFV perform the reconnaissance role and identify the enemy with two BMP-3 and two BRDM-2 vehicles. In the second stage, the OH-58D Warrior helicopters identify an enemy unit's MTLBs and BRDM-2 and destroy them. At the third level, at least for the 1-4 CAV units training on the CALFEX (Combined Live Firing Exercise) range 301 in Grafenwöhr, was an offensive operation against a heavily armed enemy with T-72 MBTs and BMP 3 IFVs. At this stage of the attack, the M3A2 Bradley CFVs were reinforced by the unit's M1A1HA Abrams tanks. In fact, cavalry units like the 1-4 CAV ("Quarterhorse") need professionally planned training to combine their three totally different weapon systems: M1A1HA MBT, M3A2 Bradley CFV and the new Warrior helicopters. The scenarios for the battle require that the cavalry unit train to advance a mission from different types of reconnaissance up to an engagement and an attack against both light and heavily armed enemy. Along with the challenge of getting cooperation between tanks and choppers comes the threat of 'friendly fire'. Special units like 1-4 CAV, with its mixture of equipment, need well educated, disciplined and perfectly trained soldiers. (Walter Böhm)



Armored Combat and Obstacle Breaching with M1A1HA Mineclearing Equipment at CMTC Hohenfels, Germany



Movement to Contact. The 7th Army Combat Maneuver Training Center (CMTC) "Seven Steps To Hell" is located in Hohenfels, Germany. Based on the experience gained from the Gulf War, troops here train on a battalion level against 'enemy' OPFOR troops in a variety of types of operations. There are numerous offensive operations such as "Hasty Attack", "Deliberate Attack", "Movement to Contact", as well as defensive operations. Another cornerstone of the training is learning how to breach obstacles and clear mine fields using mineclearing equipment. The photo shows moving M1A1HA with support troops from Task Force 4/67 in the "Superbowl Valley" at CMTC Hohenfels. (Walter Böhm)



Before obstacle clearing can begin, the Task Force develops an "R&S Plan" (Reconnaissance and Security Plan). The main focus of this plan is to become familiar with the special features of the obstacles. Recce operations are most often carried out with the support of engineers. There is an old army saying: Whoever wins the recon battle wins the main battle. Wide open areas and large obstacles forced the armored troops to conduct a frontal assault. To keep the attack zone secret, the chemical company covered the breaching zone with smoke from their M1059 smoke generators. (Walter Böhm)



The clearance gang is a mixed unit that includes a tank company with mine roller- and mine plough- equipped M1A1HA, an engineer platoon and support and reserve elements in case broken-down or disabled vehicles have to be replaced or minefields need to be cleared. (Walter Böhm)



Obstacle breaching. The breaching operation begins from the flank. Usually troops try to open paths through the minefield. This gives the attack more punch and makes recovery operations easier. Here troops from D-Co., Task Force 4/67 plough through a simulated minefield during Exercise "Iron Star 95" in Central Germany. (Walter Böhm)



Rock & Roll. After the minefield has been breached by the mine plough, the next step is for the engineers to mark the way for the troops that will follow. Then other vehicles can pass through it at high speed. (Walter Böhm)



One more way to open minefields for armored troops is by using the Mine Line Clearing Charge (MICLIC) system mounted on an M60A3 chassis. Here an M1A1HA from 1-1 CAV takes care of an M60 MICLIC. This system fires a rocket that pulls out an explosive line charge. When the line charge explodes over the minefield, it opens a path through it. (Walter Böhm)



This A-Company M1A1HA of 1-70th Armor, 3rd ID (Mech.) has an Israeli-made mine plough on its front side and the CLAMS (Cleared-Lane Marking System) box on the rear. The CLAMS marking system was not useful and is not applied today by US troops. The better way to mark paths are the "Tippy Toms", fiberglass poles with a little plate on the top. The "Tippy Toms" were dispatched from an engineer version of the M113 armored personnel carrier. (Walter Böhm)

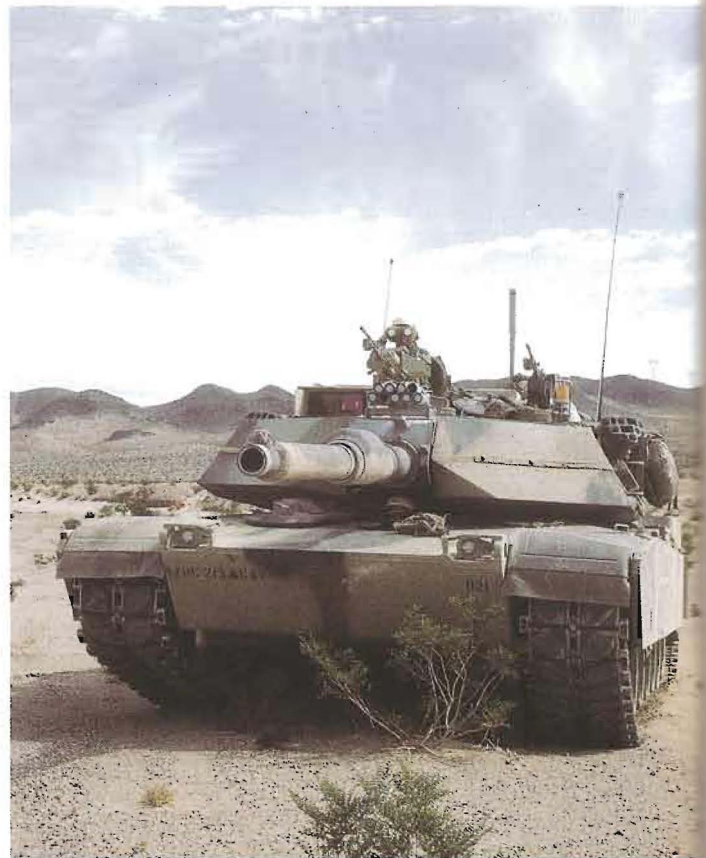
National Training Center



The largest training center for US troops is based in the Mojave Desert at Fort Irwin, California. Here CONUS-based armored units train in simulated warfare up to regiment and brigade levels. (Greg Stewart)



After the personnel of the training units arrived at NTC, they took over equipment and vehicles from the Fort Irwin depots. In this way transportation costs were reduced and the unit's own vehicles were protected against damage. (Greg Stewart)



M1A1 Abrams from H-Troop, 2nd Squadron, 3rd CAV in a battle against OPFOR. In NTC, troops of the 177th Armored Brigade acted as the opposing force. As OPFOR, they operate under the code name 60th Guards Motorized Rifle Division. The OPFOR units in NTC use visually modified "Russian style" American fighting vehicles. (Greg Stewart)

M1A1 Abrams and M3A2 Bradley CFV from L-Troop, 3rd Squadron, 3rd Cavalry Regiment ("Brave Rifles") painted in the typical NTC desert camouflage. After the troops have adopted the vehicles, the soldiers mark them with the unit's bumper codes and mount the MILES II system. (Greg Stewart)



A training rotation on the more than 300 square kilometer (1,163 mile)-wide training area takes place over several weeks. The training begins with exercises at the platoon and company levels. Subsequently, the troops learn combined warfare with tanks, infantry and support units. The final step is an exercise at the regimental and brigade level. (Greg Stewart)

An M1A1 Abrams from 1-32nd Armor, 1st Cavalry in the "Dust Bowl" at the Mojave Desert training area. The tank is painted in the typical NTC desert camouflage scheme. Bumper codes have been applied to the mine plough. (Greg Stewart)



Under the burning desert sun, soldiers from the 1st Cavalry Division repair an M1A1 powerpack. Approximately 70 percent of the engine accessories and compartments can be removed without removing the whole powerpack from the tank. (Greg Stewart)



This close-up shows the layout of the NTC camouflage. The number '100 STEP' is the vehicle's registration number at the depots at Fort Irwin. The hose on the turret is an experimental air hose that brings the air inlet to the level of the turret roof so the gas turbine can be protected against too much dust. (Greg Stewart)



The 24th "Victory" Division fights against the OPFOR at the NTC in the summer of 1993. This M1A1 belongs to 1st Platoon, C-Co., 1-64th Armor, from 2nd Brigade, US 24th Inf. Div. (Mech). The battle marking system of the 24th ID (Mech.) is different than the one used by USAREUR V Corps units in Europe. The arrows should relate to the company letters (A, B, C, D). The arrow to the left side means C-Company. (Yves Debay)



The 24th ID (Mech.) uses its own marking system, which was created prior to the Gulf War. The arrow pointing to the left on the side skirts is the symbol of a tank from C-Company, 1-64th Armor. The number "66" identifies the company commander's tank. The "V" on the frontplate is the appropriate symbol for the "Victory" Division. (Yves Debay)



Shoulder badge of US 24th Infantry Division (Mech.), the "Victory" Division.

Like the USMC, the 24th ID (Mech.) also uses small squares to identify the different platoons. This M1A1 with TWMP belongs to the 3rd Platoon, C-Co., 1-64th Armor. Note the baggage and other items around the turret. (Yves Debay)



After the troops from 1-64th Armor, the 24th ID (Mech.) adopt the tanks at the NTC depots, they mark them with small squares. The small square seen here is the symbol for 1st Platoon, C-Company. (Yves Debay)



One more M1A1 from the "Victory" Division. This unit was the first heavy division to arrive in Saudi Arabia in the summer of 1990. At this time the division was under the XVIII Airborne Corps and was still equipped with the M1 (105mm) and the M1IP. Note the Hoffman device mounted on the gun. (Greg Stewart)



Maintenance in the desert. The M1 hull has improved torsion bar suspension, with seven road wheels and four return rollers. The side skirts can traverse outward for easier maintenance. (Greg Stewart)



The M1 hull and turret are of welded construction, as evidenced in this photo. After the broken idler wheel was replaced by a new one, the track was pulled over the return rollers by an M88A1 recovery tank. Then the track was connected and tightened the track. (Greg Stewart)

M1A1HA from the US Marine Corps



A successful landing operation depends mainly on weather conditions, speed and firepower. The LCACs from the US Navy are an important key to success during amphibious operations. The LCAC combines high speed with a high loading capacity, but they need a quiet sea. A Landing Craft Air-Cushioned (LCAC) has a payload of up to 60 tons, enough for one M1A1HA MBT. (Greg Stewart)



After landing on a hostile beach with the help of an LCAC or LCU (Landing Craft Utility), the "rolling iron fortress" — the M1A1HA of the USMC tank battalions — use their 120mm guns to support the arrival of the infantry units. (Greg Stewart)



The USMC's Abrams MBTs are equipped with a Deep Water Fording Kit (DWFK), interface hardware to accept the Position Locating Report System (PLRS) and additional tiedown points for stowage on board ship during transportation on the Navy's LCACs. Shown here is an M1A1HA with DWFK from the 2nd Marine Tank Battalion at Camp Lejeune, N.C. (USMC) during the Combined Joint Task Force Exercise 96 (CJTFFEX 96). Camp Lejeune is the home of the 2nd Marine Division. (Yves Debay)



The Deep Water Fording Kit (DWFK) was developed by General Dynamics Land Systems (GDLS) for the USMC and was produced by TACOM (Tank and Automotive Command). The key parts of the DWFK are two vertical air-intake tubes located on the left side of the hull and a large exhaust tube at the rear. Three men can install this kit in less than 15 minutes, and it can be quickly removed by traversing the turret. (Greg Stewart)

Sunrise in the Mojave. In the first glow of daylight the Marines train in cooperation with tanks and support troops during a CAX (Combined Arms Exercise) in the Mojave Desert. The US Marine tanks operate in platoons of four tanks. (Greg Stewart)



The USMC ordered a total of 476 M1A1 Abrams to replace the outdated M60A1. This Abrams is marked with the tactical symbols of 2nd Platoon, C-Company (two black lines on the skirts and on the muzzle). (Greg Stewart)



One of the last modifications made to the USMC M1A1HA tanks is the diesel-powered Auxiliary Power Units (APU) mounted in the turret rack. The APU provides power to the thermal sight, air conditioning system and electronic systems when the main engine is turned off. (Greg Stewart)



This USMC Abrams is uparmed with M830 HEAT rounds. Notice the location of the Auxiliary Power Unit (APU) in the bustle rack. (Greg Stewart)



Near a supply point in the Mojave Desert this M1A1HA receives fuel from an Oshkosh MK 48/14 (8x8) heavy truck. These trucks have excellent cross-country mobility and can follow the M1A1HA tanks across difficult terrain. The MK 48/14 version is only in service with the USMC. (Greg Stewart)



This is an M1A1HA Abrams from the 2nd Platoon, A-Company. Note the replaced track cover and the new main gun bore evacuator. (Greg Stewart)



Although the USMC Abrams tanks have the new T-15 tracks, some of them are equipped with the old retainer ring on the drive sprocket. Worth of notice on this tank is the clear view of the battle markings of 3rd Platoon, B-Company. (Greg Stewart)



In contrast to the USAREUR's battle markings, the USMC uses two larger, colored symbols on the tank's side skirts. Note the modifications on the turret and the APU. (Greg Stewart)



The Abrams tanks from 4th Platoon, C-Company still have the old radio system with the big antennae. As of 1995 all US Forces M1A1HA had received the new SINCGARS radios (Single Channel Ground-Air Radio System). (Greg Stewart)



The USMC uses only a few markings on their M1A1HA tanks. Notice the arrow sign on the skirts (here for 1st Plt., C-Co.). Bumper codes are found only on the left track cover. Note also the markings on the mine plough. (Greg Stewart)



The most popular part of the Battalion Countermine Set (BCS) is the mine plough. The TWMP is the spearhead during breaching operations against hostile positions. This system, which is patterned after Soviet mine rakes, was used by the USMC during the Gulf War. (Greg Stewart)



Before the USMC received newly built M1A1HA tanks straight from the production line, 50 US Army M1A1HAs were modified for use by the Marines. Each tank was upgraded in 62 ways to bring the vehicle to USMC standards. The three rings on the gun barrel are the markings for the 3rd platoon. (Greg Stewart)

Since WWII American tankers have used orange cloth for easy identification from the sky. Here an M1A1HA platoon continues the tradition during a tactical march in the Mojave Desert. (Greg Stewart)



The Combined Joint Task Force Exercise 96 (CJTFEX 96) was a multinational exercise with US Forces and British airmobile units. This exercise was one of the largest maneuvers to ever take place in the United States. The main point of the exercise was the reinforcement of a distant operation by a US Task Force, such as what would be necessary to support the US troops in Bosnia. Here M1A1 with TWMP from 2nd Marine Tank Bn. passes a floatable bridge during CJTFEX 96. Note the Deep Water Fording Kit traveling order on the turret roof. (Yves Debay)



Just as the air-conditioning system is essential to the crew of the M1A1 Abrams, the engine's air cleaners are very important for the gas turbine. Continuous maintenance is necessary in the desert because of the omnipresent dust. (Greg Stewart)



This M1A1HA, which belongs to 2nd Platoon, C-Co., 2nd Marine Tank Bn., is participating in CJTFEX 96 in North Carolina. Modelers will want to take notice of the arrow signs painted in black on the 3-tone NATO camouflage. Visible on the turret is the ID (identification) panel. (Yves Debay)



The higher fuel consumption of the M1 tank creates a lot of problems. The Amphibious Ready Group (ARG) needs to stock up on fuel when the USMC changes to the M1A1HA. This photo shows an M1A1HA from C-Co., 2nd Marine Tank Bn. with the typical DWFK on the turret. (Yves Debay)

This M1A1HA from 2nd Platoon, A-Co., 2nd Marine Tank Bn. supports a Marine attack during CJTFEX 96. The tank is painted in forest green with arrow markings in black on the side skirts. (Yves Debay)



Abrams tanks of the 2nd Marine Tank Bn. in a French camp at Canjuers in the south of France. Tanks attached to the MEU (Marine Expeditionary Unit) consist of a platoon of five. They practice live firing at the Les Mandriers Range in southern France. (Yves Debay)



Ships of the US 6th Fleet are normally located in the Mediterranean Sea. The 2nd Marine Division, which has its home base on the east coast of the USA, are under the operative command of the Fleet Marine Force Atlantic (FMF-A). Since the Mediterranean Sea is also a deployment area for the 2nd Marine Tank Bn., the ships of the 6th Fleet always have M1A1HA tanks on board. The tanks use the French training area at Canjuers for live fire practice. (Yves Debay)



US Army and USMC units took part in Exercise "Bright Star 97" in the Egyptian desert. The M1A1HA from the 2nd Marine Tank Bn. were landed from US Navy ships. The tanks were painted in forest green for possible deployment to Bosnia. This paint scheme was not a good camouflage choice for the desert, though. (Yves Debay)

US Army M1A2 Abrams MBT at NTC, California



The first pilot vehicles of the upgraded M1A1HA received the code "Block II". These vehicles should be equipped with the most advanced and updated technology. The development of the M1A2 Abrams began in 1988. In 1992 the first five pilot vehicles were delivered to the Army for intensive troop trials. Here an M1A2 undergoes trials at the NTC. (Greg Stewart)



The General Dynamics Land Systems Division (GLDS) in Lima, Ohio, USA, produced ten M1A2 prototype vehicles. Sixty-two additional tanks were built to upgrade the GLDS assembly lines for the standard M1A2 modifications. This M1A2 pilot vehicle was fitted with additional armor plates for better protection. (Greg Stewart)



The M1A2 Abrams is easy to identify by the cylindrical Commander's Independent Thermal Viewer (CITV) built by Texas Instruments. This sight is mounted in front of the loader's hatch. With this sight the tank commander receives more information and can oversteer the gunner. (Greg Stewart)

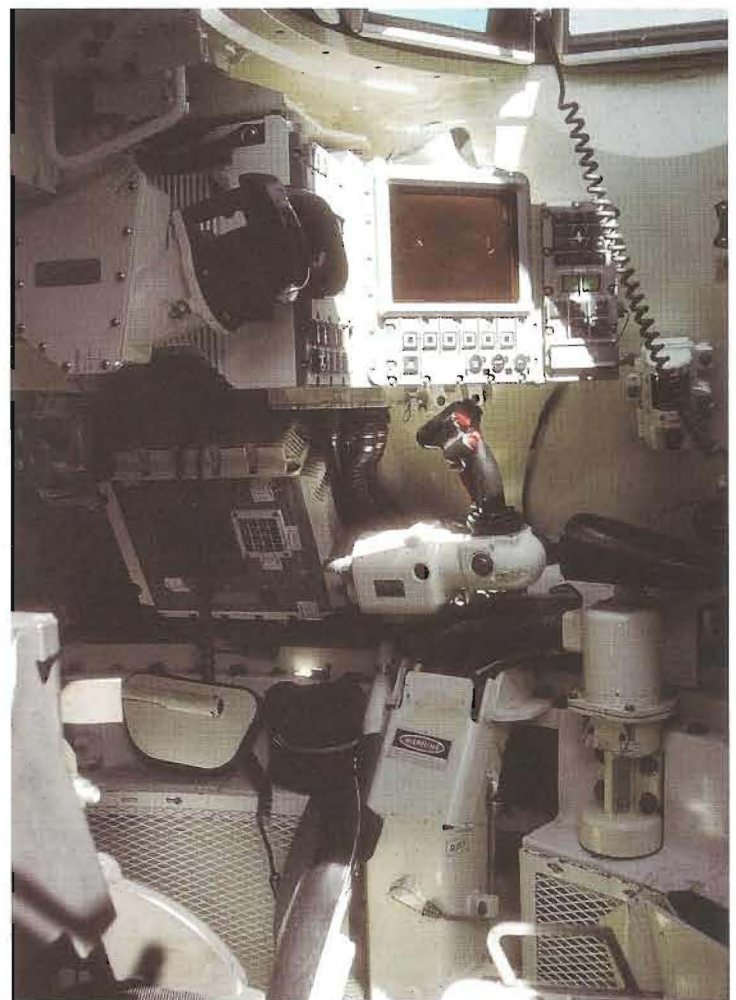
The M2 .50-caliber machine gun is standard on the M1A2. The troops like this weapon and prefer it for fighting against infantry and soft-skinned vehicles. The export versions of the French Leclerc and British Challenger II tanks are also fitted with the M2 .50-caliber machine gun. (Greg Stewart)



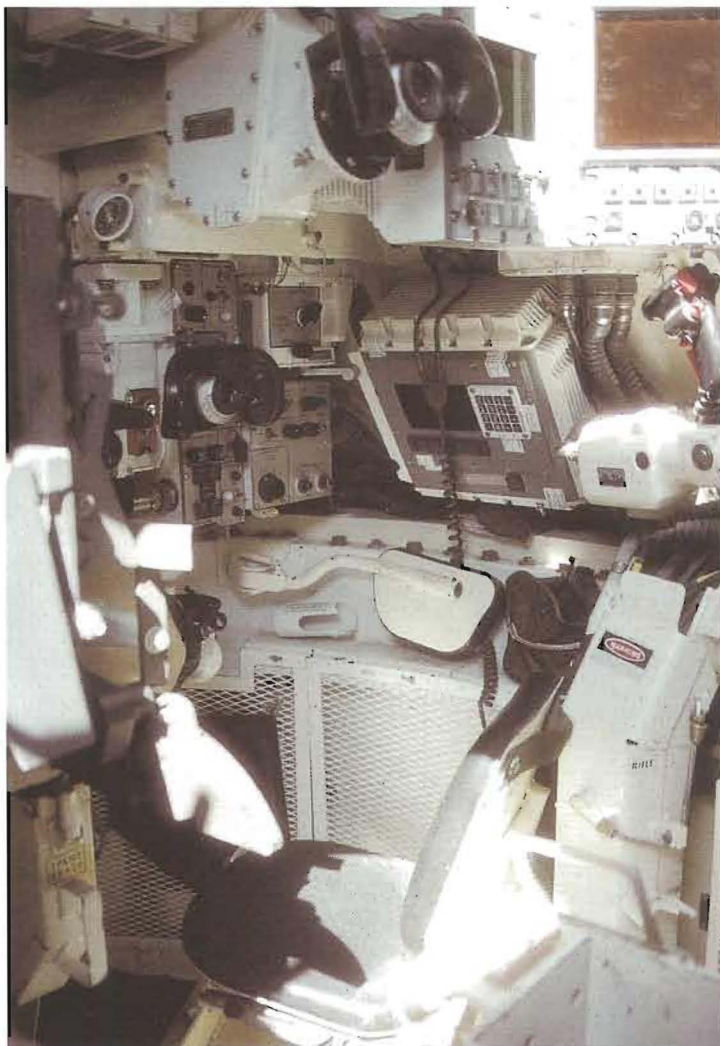
Like the Leclerc and Leopard 2A5 tanks, the M1A2 is fitted with some Tank Command and Control Systems (TCCS), FINDER, IFIS, and IVIS with color displays and colored map background. (Greg Stewart)



The Commander's Integrated Display (CID), a new control system, is the display and memory system for all software installed in the M1A2. (Greg Stewart)



The tank commander can adjust his CITV to observe a particular part of the surrounding terrain or he can oversteer with a joystick near his right hand. The CITV is linked up with the MIL-Standard 1553 Data-Bus. This makes the large wiring like that on the old M1/M1A1 no longer necessary. (Greg Stewart)



The gunner's station in the M1A2, which is right near the commander's station, is equipped with the Gunner Primary Sight and the Gunner's Control and Display Panel (GCDP). Using the GCDP, the gunner can select the desired M1A2 weapons systems. (Greg Stewart)



This is a frontal view of an M1A2 Abrams prototype. The 194th Brigade Task Force 1-70 AR uses this tank painted in desert camouflage during troop trials at the NTC. The M1A2 Abrams upgrade program adds a wide range of improvements, including the Commander's Independent Thermal Viewer (CITV), the Improved Commander's Weapon Station (ICWS), on-board position navigation equipment (POS/NAV), distributed data and power system, an improved fire control system (FCEU), and a radio interface unit (RIU). (Greg Stewart)



A close-up detail shot of the Improved Commander's Weapon Station (ICWS), which uses new wide-angle, laser-hardened periscopes, as well as a simplified M2 .50-caliber machine gun mounting. The Commander's Independent Thermal Viewer (CITV) may be seen in front of the loader's hatch. (Greg Stewart)



The Mother of All Bad Creations. The US Army Central Command supports the upgrading of approximately 1,000 older M1 tanks to the M1A2 standard. The old M1 (105mm) gun had problems during the Kuwait campaign knocking out Iraqi T-62 and T-72 tanks. (Greg Stewart)



In 1994 General Dynamics Land Systems received the contract for the M1A2 System Enhanced Package program (SEP) to upgrade old M1 tanks to the M1A2 (SEP) configuration. (Greg Stewart)

In 1996 the US Army ordered 600 upgraded M1A2 tanks (rebuilt M1s). Additional M1A2 improvements are under way to enhance the tank's digital command and control capabilities and add the second generation forward-looking infra-red sensors to the thermal sights. (Greg Stewart)



The future structure of the Army, named "Force XXI" Heavy Division, will reduce the number of tanks in a battalion down to 45 M1A2 Abrams, structured in three companies. (Greg Stewart)



The electronic system in the M1A2 Abrams is also fitted with a land navigation system (POS/NAV) built by Smith Industries. This system can determine the tank's position with 98 percent accuracy. (Greg Stewart)



The German Leopard 2 MBT uses the same 120mm smoothbore gun as the M1A1/A2. The Leopard 2A6 version will be fitted with a longer gun barrel that fires new ammunition possessing impressive armor-penetration capability. The US Army will test this new gun (named the L-55) for adoption to the M1A2. The trials with the American-developed XM291 upgraded tank gun still result in some technical problems. (Greg Stewart)

The M1A2 Abrams is an evolved and improved version of the M1A1. After the first trials with the SEP program in 1999, the first US tank battalion should be equipped with the M1A2 (SEP). Here we see an M1A2 during troop trials with the 1st Cavalry Division in the Mojave Desert. (Greg Stewart)



Some pilot M1A2 tanks were fitted during trials with an automatic loader system for the M256 gun. This would reduce the crew from 4 to 3 soldiers. But high costs and technical problems have forced the cancellation of the innovation. (The automatic loader system successfully replaced the loader crewman in Soviet T-72 and T-80 MBTs.) (Greg Stewart)

M1A2 in the Kuwait Army Inventory



The Kuwaiti tank units received the M1A2 earlier than the US troops. Here Kuwaiti M1A2 from 35th Brigade take part in Exercise "Pearl of the West 96". After a competition between M1A2 and the British Challenger II (built by Vickers Defense Systems) in 1992, the Kuwaiti government decided to buy the M1A2. (Yves Debay)



This Kuwaiti M1A2 from 35th Brigade is marked with Arabic symbols on the turret and track covers. (Yves Debay)



General Dynamics Land Systems offers the M1A2 with the German MTU883 1500hp diesel powerpack instead of the Textron Lycoming AGT 1500hp gas turbine. Greece and Turkey are interested in this configuration of the M1A2. (Yves Debay)



The long mudflaps are typical of the Kuwaiti M1A2 from 35th Brigade. Between 1994 and 1996, a total of 218 M1A2s were delivered to the Kuwait Armed Forces. (Yves Debay)



Pictured here is a Kuwaiti M1A2. Saudi Arabia also received newly produced M1A2s from GDLS. With these export orders, GDLS can close the gap in production before the lines begin to put out the order for the US Armed Forces. (Yves Debay)

A Kuwaiti M1A2 changes position during a desert exercise. The APU (Auxiliary Power Unit) became a common feature with the A2 configuration. The Arabic lettering on the turret. (Yves Debay)



Personalized Bore Evacuators/Gun Barrels on M1A1 MBTs in Germany



"BUFORD", B-Company, 2-63th Armor, US 1st ID (Mech.).



"ATOMIC DEATH", A-Company, 2-64th Armor, US 3rd ID (Mech.).



"BLOOME"/ "Eisen Scheiß werd ich tun", B-Troop, 1-4 CAV, US 1st ID (Mech.).



"ANTHROPOPHAGI", A-Company, 2-64th Armor, US 3rd ID (Mech.).



"ALL THAT..", A-Company, 2-64th Armor, US 3rd ID (Mech.)



"COMANCHE", painted on the turret an M1A1HA of C-Troop, 1-1 CAV, US 1st AD. Note the "U", standing for "Uranium", which signifies heavy armor.



"BLITZKRIEG", B-Troop, 1-1 CAV, US 1st AD.



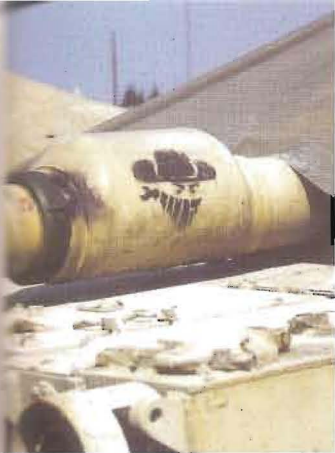
"CARDINAL SINS", C-Troop, 1-1 CAV, US 1st AD.



"ARMAGEDDON", A-Troop, 1-4 CAV, US 1st ID (Mech.).



"BALLISTIC", B-Company, 4-67th Armor, US 1st AD.



"BANDIT", B-Troop, 1-1 CAV,
US 1st AD.



"BAGHDAD OR BUST", B-
Company, 2-67th Armor, US 3rd
AD.



"BASTARDS FROM HELL", B-Company, 2-67th Armor, US 3rd AD.

Abrams Tank Crew Helmet Graffiti



Crew members of a commander's Abrams tank of 4-67th Armor ("Bandits"), US 1st AD. All helmets are painted with a skull.



Abrams tank crew of 3-77th Armor, US 1st ID (Mech.)



Tank commander of 1-77th Armor, US 1st ID (Mech.).



Crew member of 1-1 CAV, US 1st AD.



"ACES WILD", Abrams tank crew of 1-77th Armor, US 1st ID (Mech.).



Abrams loader of 1-77th Armor, US 1st ID (Mech.).



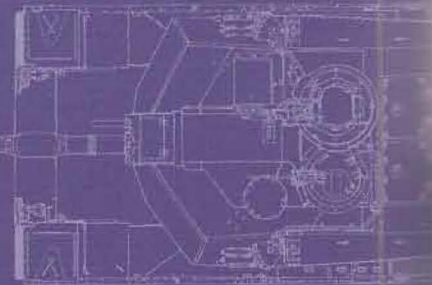
Abrams tank crew from tank number "22" from B-Troop, 1-1 CAV, US 1st AD.



"..GET SOME!..". Abrams crew member of 1-1 CAV, US 1st AD.



Tank crew of 1-77th Armor, US 1st ID (Mech.).



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